

Service
Service
Service



EPA POLLUTION PREVENTER

DDC/Power saving/TCO
User-friendliness Control

107S CM23 GSIII



104S11/00(COCA)

Service Manual

Horizontal frequencies
30 - 54 kHz

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REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.



0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 8.1A)

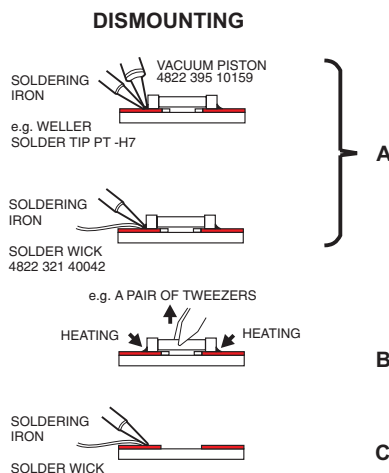


Fig. 8.1

- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 8.1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 8.1C).

1.3 Caution on removal

- When handling the soldering iron, use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

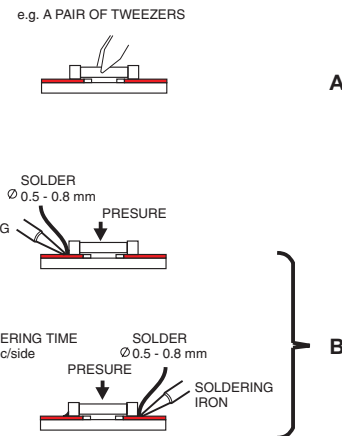
1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and

solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig. 8.2A).

- Next complete the soldering of the terminals of the component (see Fig. 8.2B).

MOUNTING



2. Caution when attaching SMDs

Fig. 8.2

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 8.3).

EXAMPLES

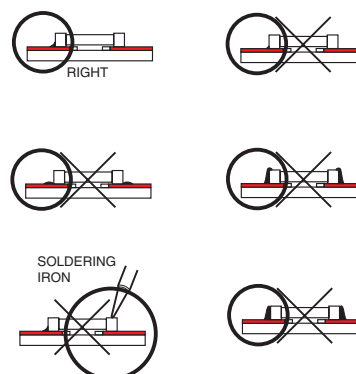
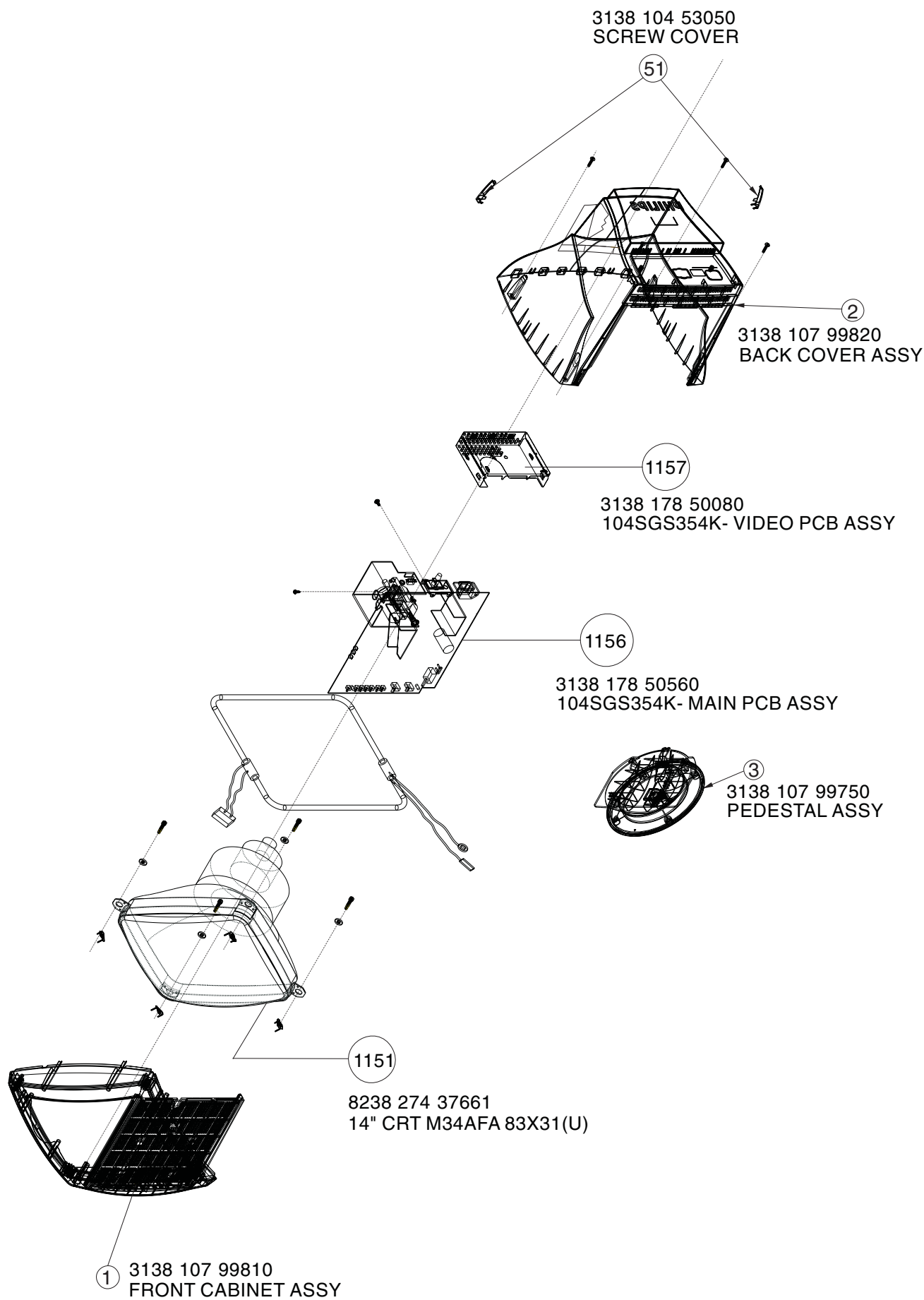


Fig. 8.3

Exploded View

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Recommended Parts list

Model : 104S11/00

ITEM	CODE	NUM	BER	DESCRIPT
1	3138	107	99811	FRONT CABINET ASSY
2	3138	107	99821	BACK COVER ASSY
3	3138	107	99751	PEDESTAL ASSY
42	3138	104	48611	BASE
44	3138	104	52991	BUTTON-POWER SWITCH
47	3138	104	53001	BUTTON-FUNCTION
49	3138	104	53051	SCREW COVER
51	3138	104	53501	KNOB-CONTRAST & (BRIGHTNESS)
52	3138	104	52751	SWIVEL
152	3138	106	58051	P.E. BAG-E-D.F.U.
450	3138	106	58111	CARTON
451	3138	106	57811	CUSHION - RIGHT
452	3138	106	57821	CUSHION - LEFT
454	3138	106	56581	PE BAG
601	3138	117	02101	E-D.F.U. ASSY(S/E/G/X SERIES)
602	3138	117	02111	E-D.F.U. (S/E/G/X SERIES)
178	3138	105	39455	SETTING UP GUIDE
179	3138	105	39133	QUICK SET UP GUIDE
1053	2438	070	98118	MAINS CORD
1054	3138	178	77301	I/F CABLE
1101	2422	086	10239	FUSE HRC T3.15AH/250V S
1102	2422	128	02659	POWER SWITCH
1156	3138	178	50561	104SGS354K- MAIN PCB ASSY
1157	3138	178	50081	104SGS354K- VIDEO PCB ASSY
1258	3138	178	00251	EEPROM ASSY (7806)-(G4CX0)
5110	3138	178	76061	POWER XFORMER
5611	3138	168	76611	L.O.T. (LCE)
7099	9352	613	72112	IC TDA4886/V1 24P
7103	9322	062	77682	IC UC3842BN 8P
7112	9338	847	00127	IC PHOTOCOUPLER CNX62A 6P
7123	9337	711	00686	IC TL431CLPRP 3P
7401	9350	679	60112	IC TDA4860/V2 9P
7501	9352	631	49112	IC TDA4857PS/V1 32P
7615	9322	133	09687	IRF640A
7801	9322	136	41682	IC LSC501985P 28P

Spare Parts List

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ITEM	CODE NUMBER				DESCRIPTION	ITEM	CODE NUMBER				DESCRIPTION
1001	2438	025	00085		1P_CONN_2	1818	2422	128	02776		SWI TACT HEQUAL TO 4 100G EVQPF B
1002	3138	178	77651		1P WAFER 2.0 DIA	1819	2422	128	02776		SWI TACT HEQUAL TO 4 100G EVQPF B
1005	2422	500	80042		CON BM CRT V 10P F NND B	2001	2038	034	56108		ELCAP S 50V 1UF PM20 2E T
1005					MAT'L 94V-0	2002	2038	034	54479		ELCAP S 25V 47UF PM20 2E T
1053					CONN : LS-13,10A 250V	2005	2020	552	90834		CCAP DC 50V 22N Z A
1053	2438	070	98118		CORD : H05VV-F,3GX0.75MM	2006	2020	552	90834		CCAP DC 50V 22N Z A
1053					MAINS CORD	2011	2020	552	90598		CERC DC NPO 50V 47P PM5 2
1054	3138	178	77301		PLUG : LP-33,10A 250V	2013	2020	552	90834		CCAP DC 50V 22N Z A
1054					I/F CABLE	2014	2038	034	58108		ELCAP S 100V 1U PM20 2E T
1054					MARKING : UL 2919 VW-1 30V 80 DEG.	2031	2020	552	90598		CERC DC NPO 50V 47P PM5 2
1099	2438	031	00072		CON BM V 12P M 2.5 625/635 B	2033	2020	552	90834		CCAP DC 50V 22N Z A
1101	▲	2422	086	10239	FUSE HRC T3.15AH/250V S	2034	2038	031	85108		ELCAP S 100V 1UF PM20 2E T
1101					MARKING : W,S T3.15AH 250V	2051	2020	552	90598		CERC DC NPO 50V 47P PM5 2
1102	2422	128	02659		POWER SWITCH	2053	2020	552	90834		CCAP DC 50V 22N Z A
1102	2422	128	02659		POWER SWITCH	2054	2038	031	85108		ELCAP S 100V 1UF PM20 2E T
1111						2056	2020	552	90598		CERC DC NPO 50V 47P PM5 2
1111	3138	178	76762		AC INLET ASSY	2071	2020	552	90834		CCAP DC 50V 22N Z A
1111	3138	178	76762		AC INLET ASSY	2072	2020	557	90151		CERC DC 500V 1N0 PM10
1111					MARKING : INALLWAY 0714 10A 250V	2073	2020	558	90406		CERC CAP DC 2KV 470P PM10
1111					MARKING : INALLWAY 0714 10A 250V	2075	2038	034	58109		ELCAP S 100V 10UF PM20 2E T
1111					MARKING : I-SHENG 7014 10A 250V	2078	2020	552	90798		CERC DC 50V 220P PM10
1111					MARKING : I-SHENG 7014 10A 250V	2079	2020	552	90798		CERC DC 50V 220P PM10
1111					MARKING : I-SHENG 7014 10A 250V	2080	2020	552	90798		CERC DC 50V 220P PM10
1112					APPROVED BY UL/CSA/TUV	2081	2020	552	90599		CERC DC NPO 50V 56P PM5 2E T
1112					APPROVED BY UL/CSA/TUV	2082	2020	552	90599		CERC DC NPO 50V 56P PM5 2E T
1112						2083	2020	552	90599		CERC DC NPO 50V 56P PM5 2E T
1112	2438	025	00208		WAFER 2P	2084	2020	552	90599		CERC DC NPO 50V 56P PM5 2E T
1112	2438	025	00208		WAFER 2P	2085	2038	034	54479		ELCAP S 25V 47UF PM20 2E T
1113	▲	3138	168	76341	3P WAFER	2086	2020	552	90589		CERC DC NPO 50V 10P PM5 2E T
1151	▲	8238	274	37661	14" CRT M34AFA 83X31(U)	2096	2038	034	54479		ELCAP S 25V 47UF PM20 2E T
1151	▲	9322	131	99682	14" CRT M34AFA 83X46(U)	2097	2020	552	90821		CERC DC 50V 10N PM10 T
1151	▲	9301	807	10323	14" CRT M34EDC 13X17	2098	2020	552	90821		CERC DC 50V 10N PM10 T
1151					APPROVED BY UL/CSA/TUV.	2099	2020	552	90821		CERC DC 50V 10N PM10 T
1151					APPROVED BY UL/CSA/TUV.	2101	▲	2020	307	90006	ACROSS LINE CAP 250V 1UF PM20
1151					APPROVED BY UL/CSA/TUV.	2101	▲				MARKING : ECQ-UV, .47UF 250V
1151					APPROVED BY UL/CSA/TUV.	2102	▲	2020	554	90139	CERSAF NSB 250V S 4N7 PM20 B
1151					APPROVED BY UL/CSA/TUV.	2102					MARKING : NS-B 472 EN132400
1156	3138	178	50071		104SGS354K- MAIN PCB ASSY	2103	▲	2020	554	90139	CERSAF NSB 250V S 4N7 PM20 B
1157	3138	178	50081		104SGS354K- VIDEO PCB ASSY	2103					MARKING : NS-B 472 EN132400
1255	3138	178	01011		VERT IC ASSY-Cost Fighter	2105		2038	035	00105	ELCAP L XK 400V S 150U PM20 B
1258	3138	178	00251		EEPROM ASSY (7806)-(G4CX0)	2107		2022	554	01177	CERC PL 500V 10N P80M20
1601	3138	100	20993		CONNECTOR 4P 2.35 DIA J101	2109		2038	034	54229	ELCAP S 25V 22UF PM20 2E T
1604	2438	032	01009		CONNECTOR 1P 1.54 DIA	2110		2038	302	50227	CAP MPOL 100V S 27N PM2 A
1811	2438	543	00058		RES XTL 4MHZ 30P GP B	2111		2020	552	90834	CCAP DC 50V 22N Z A
1813	2422	128	02776		SWI TACT HEQUAL TO 4 100G EVQPF B	2112		2038	017	50199	ELCAP 0.47U 63V PM20 2E
1814	2422	128	02776		SWI TACT HEQUAL TO 4 100G EVQPF B	2113		2020	552	90807	CERC DC 50V 1N0 PM10
1815	2422	128	02776		SWI TACT HEQUAL TO 4 100G EVQPF B	2114		2020	552	90834	CCAP DC 50V 22N Z A
1816	2422	128	02776		SWI TACT HEQUAL TO 4 100G EVQPF B	2115		2038	034	54101	ELCAP S 25V 100UF PM20 2E
1817	2422	128	02776		SWI TACT HEQUAL TO 4 100G EVQPF B	2117		2020	552	90603	CERC DC NPO 50V 100P PM5 2E T
						2118		2038	017	50199	ELCAP 0.47U 63V PM20 2E
						2120		2038	034	54101	ELCAP S 25V 100UF PM20 2E
						2126		2038	035	50072	ELCAP SK 450V S 1U PM20 A
						2127	▲	2020	554	90138	CERSAF NSA 250V S 4N7 PM20 B
						2127					MARKING : NS-A 472 EN132400
						2153		2038	035	00084	ELCAP SK 160V S 100U PM20 B
						2156		2038	035	00032	ELCAP 150UF 100V PM20 2E B
						2158		2038	034	53102	ELCAP S 16V 1000UF PM20 T
						2162		2038	034	53102	ELCAP S 16V 1000UF PM20 T
						2164		2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T

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ITEM	CODE NUMBER			DESCRIPTION	ITEM	CODE NUMBER			DESCRIPTION
2164	2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T	2616	2020	552	90821	CERC DC 50V 10N PM10 T
2171	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T	2617	2020	552	90821	CERC DC 50V 10N PM10 T
2172	2038	034	53221	ELCAP S 16V 220UF PM20 2E	2618	2038	301	00221	MPS CAP 750N 250V PM5 8E
2181	2020	552	90809	CERC PL 50V 1N5 PM10 T	2618				
2182	2020	552	90816	CERC DC 50V 4N7 PM10	2619	2038	301	00222	MPS CAP 820N 250V PM5 8E
2403	2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T	2621	2020	552	90834	CCAP DC 50V 22N Z A
2404	2038	031	85109	ELCAP S 100V 10UF PM20 2E T	2622	2020	557	90151	CERC DC 500V 1N0 PM10
2405	2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T	2629	2038	033	00008	ELCAP BP 63V S 3U3 PM20 B
2406	2020	552	90834	CCAP DC 50V 22N Z A	2631	2020	557	90122	CERC 500V 330P PM2 2E T
2407	2020	552	90807	CERC DC 50V 1N0 PM10	2639	2038	034	54479	ELCAP S 25V 47UF PM20 2E T
2408	2020	552	90807	CERC DC 50V 1N0 PM10	2642	2038	302	50229	CAP MPOL 250V S 10N PM5 A
2412	2020	552	90834	CCAP DC 50V 22N Z A	2643	2038	035	00007	ELCAP 47U 200V P50 M10
2413	2038	302	50095	MEF CAP 100V 100N PM10 2E	2647	2038	035	50209	ELCAP SH 250V S 3U3 PM20 A
2414	2020	552	90803	CERC DC 50V 470P PM10 2E	2648	2038	301	50301	PPN CAP 250V 10N PM5 2E
2502	2038	034	54101	ELCAP S 25V 100UF PM20 2E	2651	2020	552	90812	CERC CAP 50V 2N2 PM10
2503	2038	034	50477	ELCAP 0.47UF 200V PM20 2E	2812	2020	552	90594	CERC DC NPO 50V 22P PM5 2E T
2506	2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T	2813	2020	552	90594	CERC DC NPO 50V 22P PM5 2E T
2507	2038	302	50095	MEF CAP 100V 100N PM10 2E	2814	2020	552	90599	CERC DC NPO 50V 56P PM5 2E T
2508	2038	301	50186	PPN 100V 8N2 PM5 T	2819	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2509	2038	302	50218	MEF CAP 10N 100V PM2 2E	2820	2038	034	54101	ELCAP S 25V 100UF PM20 2E
2510	2038	301	00177	CAP PP PPN 100V S 12N PM2 2E	2821	2038	034	54101	ELCAP S 25V 100UF PM20 2E
2511	2020	552	90596	CERC DC NPO 50V 33P PM5 2E T	2822	2038	017	50199	ELCAP 0.47U 63V PM20 2E
2513	2038	034	56109	ELCAP S 50V 10UF PM20 2E	2823	2020	552	90834	CCAP DC 50V 22N Z A
2514	2038	034	54229	ELCAP S 25V 22UF PM20 2E T	3001	2138	101	13159	RST CRB CR12 A 15R PM5 A
2515	2020	552	90834	CCAP DC 50V 22N Z A	3002	2138	101	13159	RST CRB CR12 A 15R PM5 A
2516	2038	034	58109	ELCAP S 100V 10UF PM20 2E T	3003	2138	101	13159	RST CRB CR12 A 15R PM5 A
2517	2020	552	90834	CCAP DC 50V 22N Z A	3011	2138	101	13181	RST CRB CR12 A 180R PM5 A
2518	2038	034	56109	ELCAP S 50V 10UF PM20 2E	3012	2138	101	13271	RST CRB CR12 A 270R PM5 A
2519	2038	034	54101	ELCAP S 25V 100UF PM20 2E	3014	2138	101	13479	RST CRB CR12 A 47R PM5 A
2520	2038	301	50136	PPN CAP 100V 3N3 PM5	3015	2138	101	13222	RST CRB CR12 A 2K2 PM5 A
2522	2038	302	50121	MEF CAP 100V 150N 2E PM10	3017	2138	105	00206	TST MOX5W RSM5WL 2K2
2523	2038	302	50095	MEF CAP 100V 100N PM10 2E	3019	2322	207	33479	RST MFLM NFR25H 47R PM5
2526	2038	017	50199	ELCAP 0.47U 63V PM20 2E	3019				SAFETY RESISTOR
2527	2020	552	90834	CCAP DC 50V 22N Z A	3020	2138	116	18203	RST MFLM MF50S A 82K PM1 A
2528	2020	552	90835	CERC DC 50V 47N P80M20 2E0 2E	3021	2138	101	13682	RST CRB CR12 A 6K8 PM5 A
2601	2020	552	90821	CERC DC 50V 10N PM10 T	3022	2120	101	28339	CARBRST COMP 1/2W 33R PM10 T
2602	2038	302	50125	MEF CAP 100V 220N PM10 2E	3023	2322	207	33479	RST MFLM NFR25H 47R PM5
2603	2038	031	95005	ELCAP S 160V 1UF PM20 2E T	3023				SAFETY RESISTOR
2605	2252	612	14016	DISC CAP Y5P 2KV 100PF 2E T	3031	2138	101	13181	RST CRB CR12 A 180R PM5 A
2607	2020	557	90153	CERC DC 500V 2N2 PM10	3032	2138	101	13471	RST CRB CR12 A 470R PM5 A
2608	2038	302	50121	MEF CAP 100V 150N 2E PM10	3034	2138	101	13479	RST CRB CR12 A 47R PM5 A
2609	2038	301	00119	PPS CAP 1K6V 4N7 PM5	3035	2138	101	13222	RST CRB CR12 A 2K2 PM5 A
2610	2020	552	90834	CCAP DC 50V 22N Z A	3037	2138	105	00206	TST MOX5W RSM5WL 2K2
2611	2020	301	90212	CAP PP DTW 630V S 5N6 PM5 B	3038	2322	207	33479	RST MFLM NFR25H 47R PM5
2616	2020	552	90821	CERC DC 50V 10N PM10 T	3038				SAFETY RESISTOR
					3039	2322	207	33479	RST MFLM NFR25H 47R PM5
					3039				SAFETY RESISTOR
					3040	2138	116	18203	RST MFLM MF50S A 82K PM1 A
					3041	2138	101	13682	RST CRB CR12 A 6K8 PM5 A
					3042	2120	101	28339	CARBRST COMP 1/2W 33R PM10 T
					3051	2138	101	13181	RST CRB CR12 A 180R PM5 A
					3052	2138	101	13181	RST CRB CR12 A 180R PM5 A
					3054	2138	101	13479	RST CRB CR12 A 47R PM5 A
					3055	2138	101	13222	RST CRB CR12 A 2K2 PM5 A
					3057	2138	105	00206	TST MOX5W RSM5WL 2K2
					3058	2322	207	33479	RST MFLM NFR25H 47R PM5
					3058				SAFETY RESISTOR
					3059	2322	207	33479	RST MFLM NFR25H 47R PM5
					3059				SAFETY RESISTOR
					3060	2138	116	18203	RST MFLM MF50S A 82K PM1 A
					3061	2120	101	28339	CARBRST COMP 1/2W 33R PM10 T
					3062	2138	101	13682	RST CRB CR12 A 6K8 PM5 A
					3063	2138	101	13153	RST CRB CR12 A 15K PM5 A
					3071	2120	101	28152	CARBRST COMP 1/2W 1K5 PM10
					3072	2120	101	28153	CARBRST COMP 1/2W 15K PM10






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ITEM	CODE	NUMBER	DESCRIPTION	ITEM	CODE	NUMBER	DESCRIPTION
3073	2322	207 33108	MET FLM RST NFR25H 1R0 PM5 T	3145	2138	101 13681	RST CRB CR12 A 680R PM5 A
3073			SAFETY RESISTOR	3154	2138	116 11503	RST MFLM MF50S A 15K PM1 A
3075	2138	101 13101	RST CRB CR12 A 100R PM5 A	3155	2138	116 11503	RST MFLM MF50S A 15K PM1 A
3076	2138	101 13101	RST CRB CR12 A 100R PM5 A	3156	2138	101 13104	RST CRB CR12 A 100K PM5 A
3077	2138	101 13101	RST CRB CR12 A 100R PM5 A	3157	2138	101 13273	RST CRB CR12 A 27K PM5 A
3088	2138	101 13101	RST CRB CR12 A 100R PM5 A	3157		13273	RST CRB CR12 A 27K PM5 A
3089	2138	101 13339	RST CRB CR12 A 33R PM5 A	3158	2138	101 13473	RST CRB CR12 A 47K PM5 A
3090	2138	101 13339	RST CRB CR12 A 33R PM5 A	3160	2138	101 13153	RST CRB CR12 A 15K PM5 A
3091	2138	101 13339	RST CRB CR12 A 33R PM5 A	3166	2138	116 11001	RST MFLM MF50S A 100R PM1 A
3092	2138	101 13339	RST CRB CR12 A 33R PM5 A	3171	2138	101 13152	RST CRB CR12 A 1K5 PM5 A
3093	2138	101 13103	RST CRB CR12 A 10K PM5 A	3173	2138	101 13104	RST CRB CR12 A 100K PM5 A
3094	2138	101 13101	RST CRB CR12 A 100R PM5 A	3176	2138	116 17503	RST MFLM MF50S A 75K PM1 A
3095	2138	101 13472	RST CRB CR12 A 4K7 PM5 A	3177	2138	116 18203	RST MFLM MF50S A 82K PM1 A
3096	2138	101 13472	RST CRB CR12 A 4K7 PM5 A	3178	2138	365 00077	RTRM CER LIN 500R H VG067TL1 B
3097	2138	101 13759	RST CRB CR12 A 75R PM5 A	3180	2138	101 13202	RST CRB CR12 A 2K0 PM5 A
3098	2138	101 13759	RST CRB CR12 A 75R PM5 A	3184	2138	101 13821	RST CRB CR12 A 820R PM5 A
3099	2138	101 13759	RST CRB CR12 A 75R PM5 A	3186	2138	116 14301	RST MFLM MF50S A 430R PM1 A
3101	2322	242 13684	METGLAZ RST A VR37 680K PM5	3401	2138	116 11802	RST MFLM MF50S A 1K8 PM1 A
3102				3403	2322	207 33228	RST FUSE NFR25H 2R2 PM5
3102	2122	663 00003	MARKING : T104 PTC 14R T104-B80-A10	3403			SAFETY RESISTOR
3109	2138	660 00025	NTC SCK104 10R PM15	3405	2322	207 33221	RST NFR25H 220R PM5
3110	2138	116 11004	RST MFLM MF50S A 100K PM1 A	3405			SAFETY RESISTOR
3111	2138	105 00207	RST MOX 2W RSS S 56K PM5 B	3406	2138	116 11802	RST MFLM MF50S A 1K8 PM1 A
3115	2138	101 13222	RST CRB CR12 A 2K2 PM5 A	3407	2322	207 33228	RST FUSE NFR25H 2R2 PM5
3116	2138	112 73158	CARBRST FLM A 1/4W 1R5 PM5	3407			SAFETY RESISTOR
3117	2138	112 73108	CARBRST FLM CR25 1R PM5 T	3409	2138	116 12401	RST MFLM MF50S A 240R PM1 A
3118	2138	112 73108	CARBRST FLM CR25 1R PM5 T	3410	2322	207 33228	RST FUSE NFR25H 2R2 PM5
3120	2138	101 13332	RST CRB CR12 A 3K3 PM5 A	3410			SAFETY RESISTOR
3121	2138	101 13222	RST CRB CR12 A 2K2 PM5 A	3411	2138	116 04158	RST MFLM MF50S A 1R5 PM5 A
3122	2138	101 13102	RST CRB CR12 A 1K PM5 A	3412	2138	116 04208	RST MFLM MF-50S A 2R PM5 A
3123	2138	101 13683	RST CRB CR12 A 68K PM5 A	3413	2138	101 13471	RST CRB CR12 A 470R PM5 A
3124	2138	101 13152	RST CRB CR12 A 1K5 PM5 A	3414	2138	101 13471	RST CRB CR12 A 470R PM5 A
3125	2322	207 33479	RST MFLM NFR25H 47R PM5	3421	2138	101 13221	RST CRB CR12 A 220R PM5 A
3125			SAFETY RESISTOR	3501	2138	101 13471	RST CRB CR12 A 470R PM5 A
3126	2138	101 13121	RST CRB CR12 A 120R PM5 A	3502	2138	101 13473	RST CRB CR12 A 47K PM5 A
3127	2138	101 13103	RST CRB CR12 A 10K PM5 A	3503	2138	101 13154	RST CRB CR12 A 150K PM5 A
3128	2138	101 13103	RST CRB CR12 A 10K PM5 A	3504	2138	101 13472	RST CRB CR12 A 4K7 PM5 A
3129	2138	101 13102	RST CRB CR12 A 1K PM5 A	3505	2138	101 13683	RST CRB CR12 A 68K PM5 A
3130	2138	101 13332	RST CRB CR12 A 3K3 PM5 A	3506	2138	101 13103	RST CRB CR12 A 10K PM5 A
3131	2138	116 11302	RST MFLM MF50S A 1K3 PM1 A	3507	2138	116 12704	RST MFLM MF50S A 270K PM1 A
3133	2322	207 33228	RST FUSE NFR25H 2R2 PM5	3508	2138	116 14703	RST MFLM MF50S A 47K PM1 A
3133			SAFETY RESISTOR	3510	2138	116 14303	RST MFLM MF50S A 43K PM1 A
3134	2138	116 11004	RST MFLM MF50S A 100K PM1 A	3511	2120	366 90218	CARBOT 0.05W 10K PM20 W/
3135	3138	100 50481	METOX FLM RST 3W 100K PM5	3513	2138	101 13153	RST CRB CR12 A 15K PM5 A
3140	2138	101 13472	RST CRB CR12 A 4K7 PM5 A	3514	2138	101 13101	RST CRB CR12 A 100R PM5 A
3143	2138	101 13104	RST CRB CR12 A 100K PM5 A	3515	2138	101 13101	RST CRB CR12 A 100R PM5 A
3144	2138	101 13473	RST CRB CR12 A 47K PM5 A				

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ITEM	CODE NUMBER			DESCRIPTION	ITEM	CODE NUMBER			DESCRIPTION
3515	2138	101	13101	RST CRB CR12 A 100R PM5 A	3566	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3516	2138	101	13471	RST CRB CR12 A 470R PM5 A	3602	2138	101	13202	RST CRB CR12 A 2K0 PM5 A
3517 	2322	207	33568	MET FLM NFR25H 5R6 PM5 SAFETY RESISTOR	3603	2138	105	00411	RSS 2W 8.2K PM5
3518	2138	101	13332	RST CRB CR12 A 3K3 PM5 A	3605	2120	105	92157	MET FLM RST 2W 150R PM5 6E B
3519	2138	116	11602	RST MFLM MF50S A 1K6 PM1 A					
3520	2138	116	12802	RST MFLM MF50S A 2K8 PM1 A	3606	2138	105	00081	RST MOX 3W RSU S 2R2 PM5 B
3521	2138	116	11203	RST MFLM MF50S A 12K PM1 A	3607	2138	116	11009	RST MFLM MF50S A 10R PM1 A
3522	2138	101	13822	RST CRB CR12 A 8K2 PM5 A	3608	2138	101	13222	RST CRB CR12 A 2K2 PM5 A
3523	2138	101	13103	RST CRB CR12 A 10K PM5 A	3611	2120	105	92403	MET FLM RSS1J 1W 180R PM5 L125
3524	2138	101	13271	RST CRB CR12 A 270R PM5 A					
3525	2138	101	13681	RST CRB CR12 A 680R PM5 A	3619	2138	116	11004	RST MFLM MF50S A 100K PM1 A
3526	2138	101	13333	RST CRB CR12 A 33K PM5 A	3621	2138	101	13154	RST CRB CR12 A 150K PM5 A
3527	2138	101	13183	RST CRB CR12 A 18K PM5 A	3622	2138	101	13473	RST CRB CR12 A 47K PM5 A
3528	2138	101	13473	RST CRB CR12 A 47K PM5 A	3623	2138	101	13103	RST CRB CR12 A 10K PM5 A
3529	2138	101	13183	RST CRB CR12 A 18K PM5 A	3624	2138	101	13333	RST CRB CR12 A 33K PM5 A
3530	2138	101	13563	RST CRB CR12 A 56K PM5 A	3636	2138	101	13223	RST CRB CR12 A 22K PM5 A
3531	2138	101	13154	RST CRB CR12 A 150K PM5 A	3637	2138	101	13432	RST CRB CR12 A 4K3 PM5 A
3532	2138	101	13104	RST CRB CR12 A 100K PM5 A	3638	2138	101	13103	RST CRB CR12 A 10K PM5 A
3533	2138	116	11004	RST MFLM MF50S A 100K PM1 A	3639	2138	101	13102	RST CRB CR12 A 1K PM5 A
3534	2138	116	12703	RST MFLM MF50S A 27K PM1 A	3640	2138	101	13102	RST CRB CR12 A 1K PM5 A
3535	2138	101	13222	RST CRB CR12 A 2K2 PM5 A	3641	2138	101	13102	RST CRB CR12 A 1K PM5 A
3536	2138	101	13333	RST CRB CR12 A 33K PM5 A	3642	2138	101	13223	RST CRB CR12 A 22K PM5 A
3537	2138	101	13222	RST CRB CR12 A 2K2 PM5 A					
3538	2138	101	13752	RST CRB CR12 A 7K5 PM5 A	3643 	2322	207	33689	RST FUSE NFR25H S 68R PM5 T SAFETY RESISTOR
3539	2138	101	13104	RST CRB CR12 A 100K PM5 A	3644 	2322	207	33108	MET FLM RST NFR25H 1R0 PM5 T SAFETY RESISTOR
3540	2138	365	00076	RTRM CER LIN 10K H VG067TL1 B	3646	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3541	2138	101	13222	RST CRB CR12 A 2K2 PM5 A	3650	2138	116	04475	RST MFLM MF50S A 4M7 PM5
3542	2138	116	18204	RST MFLM MF50S A 820K PM1 A					
3543	2138	112	73102	CARBRST FLM CR25 1K0 PM5 5	3651 	2322	207	33108	MET FLM RST NFR25H 1R0 PM5 T SAFETY RESISTOR
3544	2138	112	73102	CARBRST FLM CR25 1K0 PM5 5	3652 	2322	207	33101	RST MFLM NFR25H 100R PM5 SAFETY RESISTOR
3545	2138	101	13204	RST CRB CR12 A 200K PM5 A	3653	2138	116	11503	RST MFLM MF50S A 15K PM1 A
3546	2138	101	13823	RST CRB CR12 A 82K PM5 A	3654	2138	116	18204	RST MFLM MF50S A 820K PM1 A
3547	2138	116	12203	RST MFLM MF50S A 22K PM1 A	3656	2138	101	13562	RST CRB CR12 A 5K6 PM5 A
3548	2138	101	13564	RST CRB CR12 A 560K PM5 A	3657	2138	101	13391	RST CRB CR12 A 390R PM5 A
3549	2138	101	13104	RST CRB CR12 A 100K PM5 A	3658	2138	101	13223	RST CRB CR12 A 22K PM5 A
3550	2138	116	11204	RST MFLM MF50S A 120K PM1 A	3662	2138	101	13471	RST CRB CR12 A 470R PM5 A
3551	2138	101	13102	RST CRB CR12 A 1K PM5 A	3685	2138	101	13474	RST CRB CR12 A 470K PM5 A
3552	2138	101	13222	RST CRB CR12 A 2K2 PM5 A	3812	2138	101	13103	RST CRB CR12 A 10K PM5 A
3561	2138	101	13101	RST CRB CR12 A 100R PM5 A	3813	2138	101	13272	RST CRB CR12 A 2K7 PM5 A
3562	2138	101	13102	RST CRB CR12 A 1K PM5 A	3814	2138	101	13563	RST CRB CR12 A 56K PM5 A
3563	2138	101	13272	RST CRB CR12 A 2K7 PM5 A	3816	2138	101	13103	RST CRB CR12 A 10K PM5 A
3564	2138	101	13472	RST CRB CR12 A 4K7 PM5 A	3817	2138	101	13221	RST CRB CR12 A 220R PM5 A
3565	2120	366	90218	CARBPOT 0.05W 10K PM20 W/	3818	2138	101	13222	RST CRB CR12 A 2K2 PM5 A

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ITEM	CODE NUMBER			DESCRIPTION	ITEM	CODE NUMBER			DESCRIPTION	
3818	2138	101	13222	RST CRB CR12 A 2K2 PM5 A	5155	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R	
3825	2138	101	13153	RST CRB CR12 A 15K PM5 A	5601	3138	128	75441	HOR. DRIVER TRANSFORMER	
3826	2138	101	13472	RST CRB CR12 A 4K7 PM5 A	5605	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R	
3827	2138	101	13221	RST CRB CR12 A 220R PM5 A	5608	3138	178	75721	LINEARITY COIL	
3828	2138	101	13221	RST CRB CR12 A 220R PM5 A	5609	3138	128	71701	BRIDG COIL 110UH	
3829	2138	101	13222	RST CRB CR12 A 2K2 PM5 A	5610	2422	535	97416	COIL 33MUH PM10	
3830	2138	101	13222	RST CRB CR12 A 2K2 PM5 A						
3831	2138	101	13101	RST CRB CR12 A 100R PM5 A	5611	▲	3138	168	76611	L.O.T. (LCE)
3832	2138	101	13101	RST CRB CR12 A 100R PM5 A						
3833	2138	101	13221	RST CRB CR12 A 220R PM5 A						
3834	2138	101	13101	RST CRB CR12 A 100R PM5 A	5612	3138	178	75991	DRUM CHOKE COIL 6MH	
3835	2138	101	13101	RST CRB CR12 A 100R PM5 A	5614	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R	
3837	2138	101	13222	RST CRB CR12 A 2K2 PM5 A	5615	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R	
3838	2138	101	13473	RST CRB CR12 A 47K PM5 A	6011	3198	010	10011	DIODE 1N4148 (UAW)	
3839	2138	101	13223	RST CRB CR12 A 22K PM5 A	6012	3198	010	10011	DIODE 1N4148 (UAW)	
3840	2138	101	13103	RST CRB CR12 A 10K PM5 A	6013	3198	010	10071	DIODE BAV21 (UAW)	
3841	2138	101	13472	RST CRB CR12 A 4K7 PM5 A	6031	3198	010	10011	DIODE 1N4148 (UAW)	
3842	2138	101	13103	RST CRB CR12 A 10K PM5 A	6032	3198	010	10011	DIODE 1N4148 (UAW)	
3843	2138	101	13272	RST CRB CR12 A 2K7 PM5 A	6033	3198	010	10071	DIODE BAV21 (UAW)	
3844	2138	101	13102	RST CRB CR12 A 1K PM5 A	6051	3198	010	10011	DIODE 1N4148 (UAW)	
3845	2138	101	13472	RST CRB CR12 A 4K7 PM5 A	6052	3198	010	10011	DIODE 1N4148 (UAW)	
3847	2138	101	13101	RST CRB CR12 A 100R PM5 A	6053	3198	010	10071	DIODE BAV21 (UAW)	
3848	2138	101	13473	RST CRB CR12 A 47K PM5 A	6071	9337	234	10133	DIO REC BYD33G	
3849	2138	101	13183	RST CRB CR12 A 18K PM5 A	6072	9337	234	10133	DIO REC BYD33G	
3850	2138	101	13472	RST CRB CR12 A 4K7 PM5 A	6094	3198	010	10011	DIODE 1N4148 (UAW)	
3851	2138	101	13223	RST CRB CR12 A 22K PM5 A	6095	3198	010	10011	DIODE 1N4148 (UAW)	
3852	2138	101	13222	RST CRB CR12 A 2K2 PM5 A	6096	3198	010	25681	DIODE BZX79-C5V6 (UAW)	
3853	2138	101	13103	RST CRB CR12 A 10K PM5 A	6097	3198	010	25681	DIODE BZX79-C5V6 (UAW)	
3854	2138	101	13103	RST CRB CR12 A 10K PM5 A	6098	3198	010	25681	DIODE BZX79-C5V6 (UAW)	
3855	2138	101	13222	RST CRB CR12 A 2K2 PM5 A	6099	3198	010	25681	DIODE BZX79-C5V6 (UAW)	
5007	3138	178	76321	DEGAUSSING COIL	6101	9322	058	14682	BRIDGE GBU4K	
5011	2422	535	97069	COIL 4U7 PM10	6105	9334	979	50683	DIODE RGP10J (GI)	
5012	2422	535	97608	COIL 1MUH8 PM10	6106	3198	010	10011	DIODE 1N4148 (UAW)	
5014	2422	535	94971	DRUM CHOKE COIL 100UH T	6108	9334	979	50683	DIODE RGP10J (GI)	
5031	2422	535	97069	COIL 4U7 PM10	6109	3198	010	10071	DIODE BAV21 (UAW)	
5032	2422	535	97608	COIL 1MUH8 PM10	6110	3198	010	10071	DIODE BAV21 (UAW)	
5051	2422	535	97073	COIL 8U2H PM10	6111	3198	010	10011	DIODE 1N4148 (UAW)	
5052	2422	535	97608	COIL 1MUH8 PM10	6112	9337	516	60683	DIODE RGP10D (GI)	
5071	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R	6115	3198	010	21591	DIODE BZX79-C15 (UAW)	
5096	2422	535	97608	COIL 1MUH8 PM10	6117	3198	010	10011	DIODE 1N4148 (UAW)	
5097	2438	535	98026	IND FXD BEAD EMI 100MHZ 35R R	6123	3198	010	10071	DIODE BAV21 (UAW)	
5098	2438	535	98026	IND FXD BEAD EMI 100MHZ 35R R	6157	9338	185	00133	DIODE BYM26C	
5099	2438	535	98026	IND FXD BEAD EMI 100MHZ 35R R						
5101	▲	3138	128	71291	LINE FILTER					
5101				MARKING : 54A-4075						
5103	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R	6401	9335	435	00133	DIO REC BYV27-100	
5108	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R	6403	9335	007	30133	DIODE BZV85-C22	
5110				MARKING :SRW35EC-T51V118	6512	3198	010	10011	DIODE 1N4148 (UAW)	
5110	▲	3138	178	76061	POWER XFORMER	6513	9337	516	60683	DIODE RGP10D (GI)
					6514	9331	668	50133	DIODE BZX79-B8V2 T	
5155	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R	6515	3198	010	10011	DIODE 1N4148 (UAW)	

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ITEM	CODE NUMBER			DESCRIPTION	ITEM	CODE NUMBER			DESCRIPTION
6516	3198	010	10011	DIODE 1N4148 (UAW)	7506	3198	020	40081	TRANS BC548C (UAW)
6517	3198	010	10011	DIODE 1N4148 (UAW)	7507	3198	020	40161	TRANS BC558C (UAW)
6519	3198	010	10011	DIODE 1N4148 (UAW)	7508	3198	020	40161	TRANS BC558C (UAW)
6603	3198	010	10071	DIODE BAV21 (UAW)	7605	9340	039	60126	TRANS BSN254A
6604	9337	516	60683	DIODE RGP10D (GI)	7611	3198	020	40161	TRANS BC558C (UAW)
6605	3198	010	10011	DIODE 1N4148 (UAW)	7612	3198	020	40081	TRANS BC548C (UAW)
6606	9335	434	90133	DIO REC BYV27-50	7615	9322	133	09687	IRF640A
6608	9322	103	88682	DIO REC 31DF6 A (INRO) B	7801	9322	136	41682	IC LSC501985P 28P
6614	3198	010	21591	DIODE BZX79-C15 (UAW)	7806	9322	097	23682	IC ST24W04B6 8P
6631	3198	010	21591	DIODE BZX79-C15 (UAW)	60	3138	104	49481	FOOT RUBBER
6632	9322	057	87683	DIODE EGP20G	47	3138	104	52991	BUTTON-POWER SWITCH
6636	3198	010	10011	DIODE 1N4148 (UAW)	49	3138	104	53001	BUTTON-FUNCTION
6637	9334	939	60683	DIODE RGP10G (GI)	53	3138	104	53021	LENS-POWER
6811	9322	053	50682	LED GREEN LTL-4234	54	3138	104	53011	LENS-FUNCTION
6812	2438	265	00014	LED L-59YGC	127	3138	101	26651	SPRING - POWER
6813	3198	010	23381	DIODE BZX79-C3V3 (UAW)	62	3138	104	50701	SPONGE
7011	3198	020	43311	TRANS PH2369 (UAW)	153	3138	106	58051	P.E. BAG-E-D.F.U.
7012	9322	002	50682	TRANS. 2SC3953D	178	3138	105	39455	SETTING UP GUIDE
7013	9340	415	10126	TRANSISTORS BFV420	57	3138	104	52821	HOLDER
7014	9340	415	20126	TRANSISTORS BFV421	58	3138	104	44011	RUBBER PAD
7031	3198	020	43311	TRANS PH2369 (UAW)	71	3138	101	62261	I/F CABLE BRACKET
7032	9322	002	50682	TRANS. 2SC3953D	73	3138	101	30871	SPRING (FUSE HOLDER)
7033	9340	415	10126	TRANSISTORS BFV420	57	3138	104	52821	HOLDER
7034	9340	415	20126	TRANSISTORS BFV421	58	3138	104	44011	RUBBER PAD
7051	3198	020	43311	TRANS PH2369 (UAW)	73	3138	101	30871	SPRING (FUSE HOLDER)
7052	9322	002	50682	TRANS. 2SC3953D					
7053	9340	415	10126	TRANSISTORS BFV420					
7054	9340	415	20126	TRANSISTORS BFV421					
7099	9352	613	72112	IC TDA4886/V1 24P					
7103	9322	062	77682	IC UC3842BN 8P					
7104	3198	020	40161	TRANS BC558C (UAW)					
7105	3198	020	40081	TRANS BC548C (UAW)					
7106	3198	020	40161	TRANS BC558C (UAW)					
7107	3198	020	40081	TRANS BC548C (UAW)					
7108	3198	020	40081	TRANS BC548C (UAW)					
7112	9338	847	00127	IC PHOTOCOUPLER CNX62A 6P					
7123	9337	711	00686	IC TL431CLPRP 3P					
7153	9322	067	50676	TRA SIG BF420 S (TOSJ)					
7154	9335	107	20686	IC MC78L05ACPRP 3P					
7156	9335	282	90682	IC MC7808CT 3P					
7160	9332	514	50127	TRANS BD330					
7161	3198	020	40081	TRANS BC548C (UAW)					
7401	9350	679	60112	IC TDA4860/V2 9P					
7501	9352	631	49112	IC TDA4857PS/V1 32P					
7502	3198	020	40081	TRANS BC548C (UAW)					
7503	3198	020	43021	TRANS BF423 (UAW)					
7504	9332	377	80126	TRANS BC546B (UAW)					
7505	3198	020	43311	TRANS PH2369 (UAW)					

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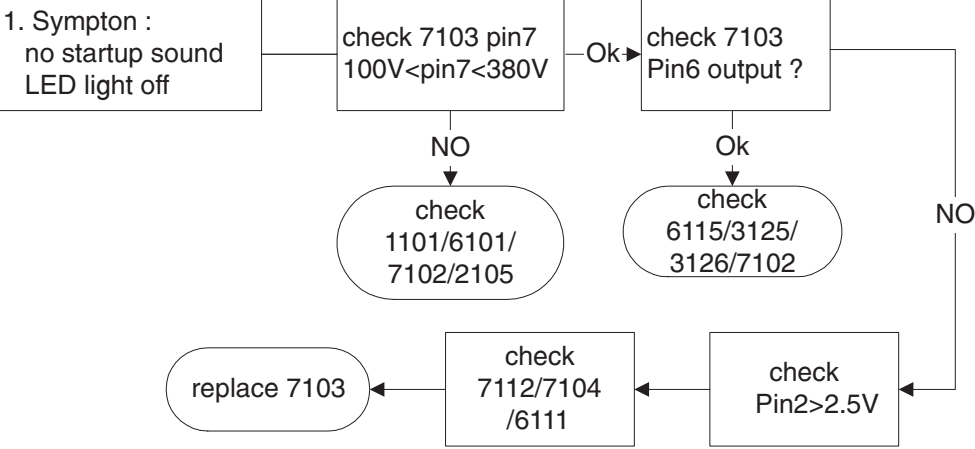
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1	3138	107	99811	FRONT CABINET ASSY
2	3138	107	99821	BACK COVER ASSY
3	3138	107	99751	PEDESTAL ASSY
51	3138	104	53051	SCREW COVER
52	3138	104	53501	KNOB-CONTRAST & (BRIGHTNESS)
57	3138	104	40571	HOUSING COVER
104	3138	103	20263	CABLE TIE
105	3138	103	21651	CABLE TIE (142MM)
113	3138	101	31941	PLATE
152	2838	062	90083	RUBBER BAND
179	3138	105	39133	QUICK SET UP GUIDE
602	3138	117	02111	E-D.F.U. (S/E/G/X SERIES)
601	3138	117	02101	E-D.F.U. ASSY(S/E/G/X SERIES)

Repair flow chart

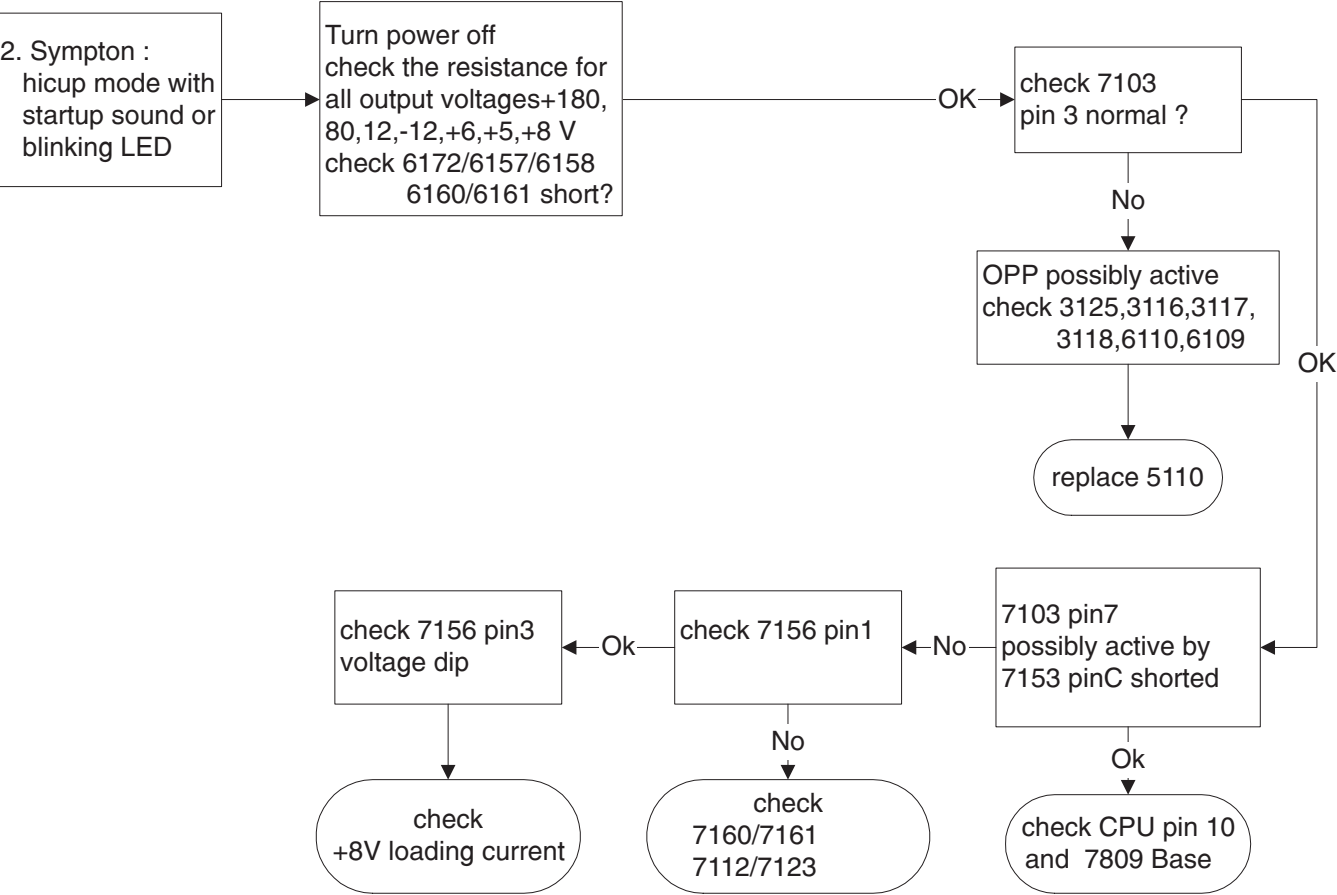
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A. Power Supply Failure

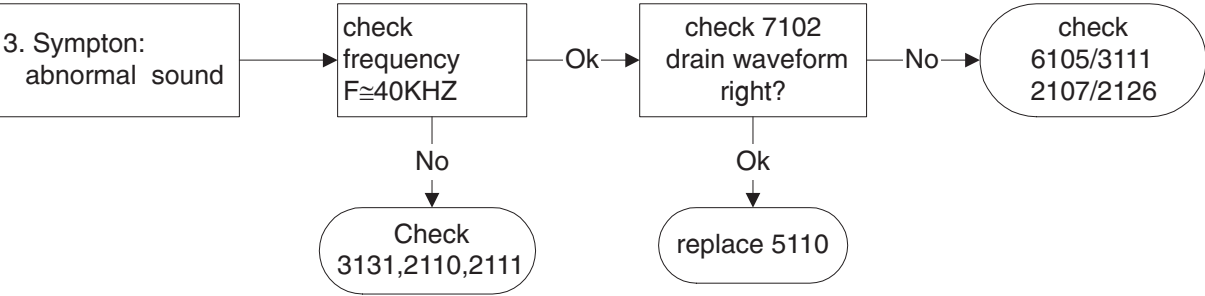
1. Sympton :
no startup sound
LED light off



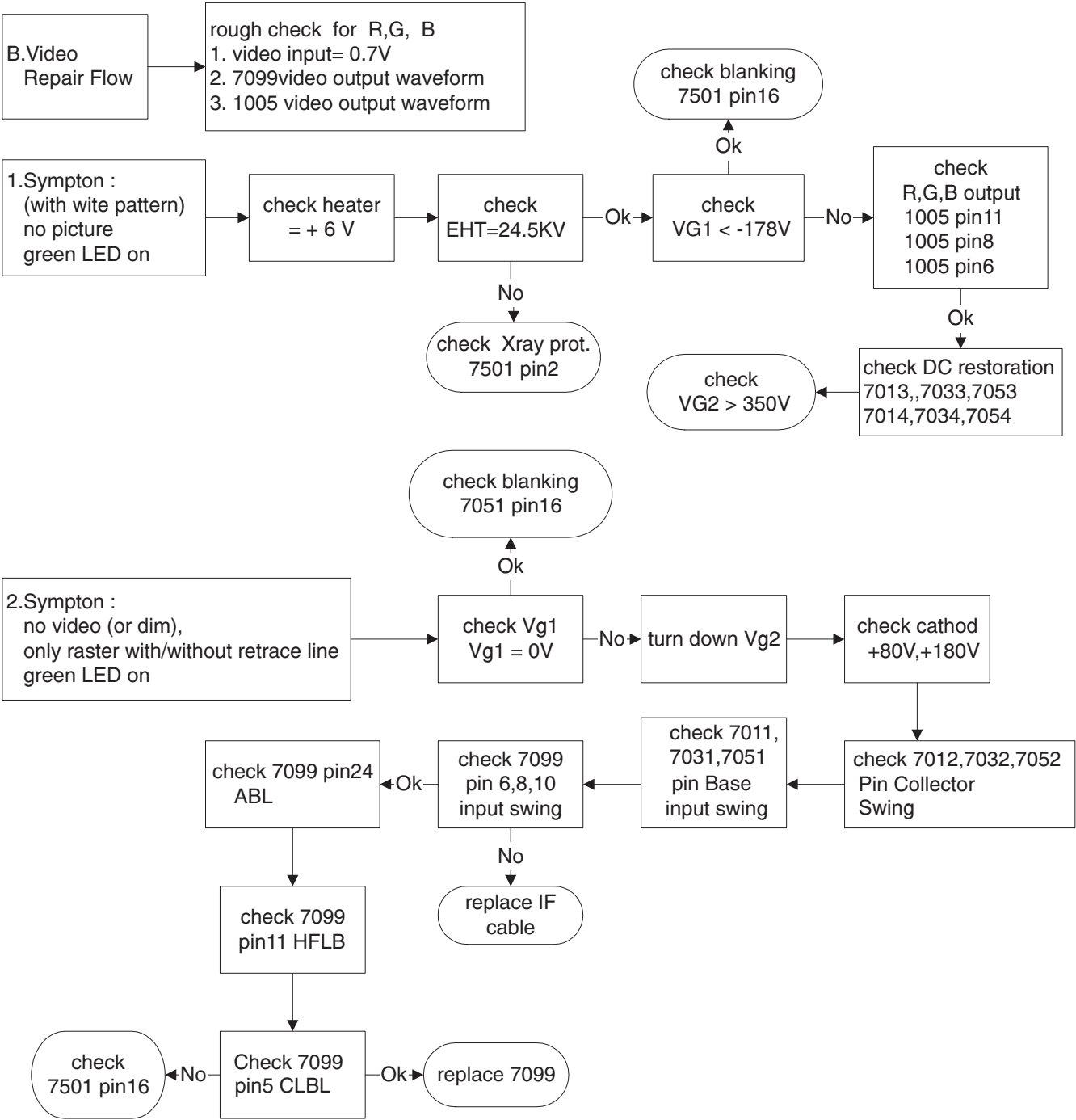
2. Sympton :
hicup mode with
startup sound or
blinking LED



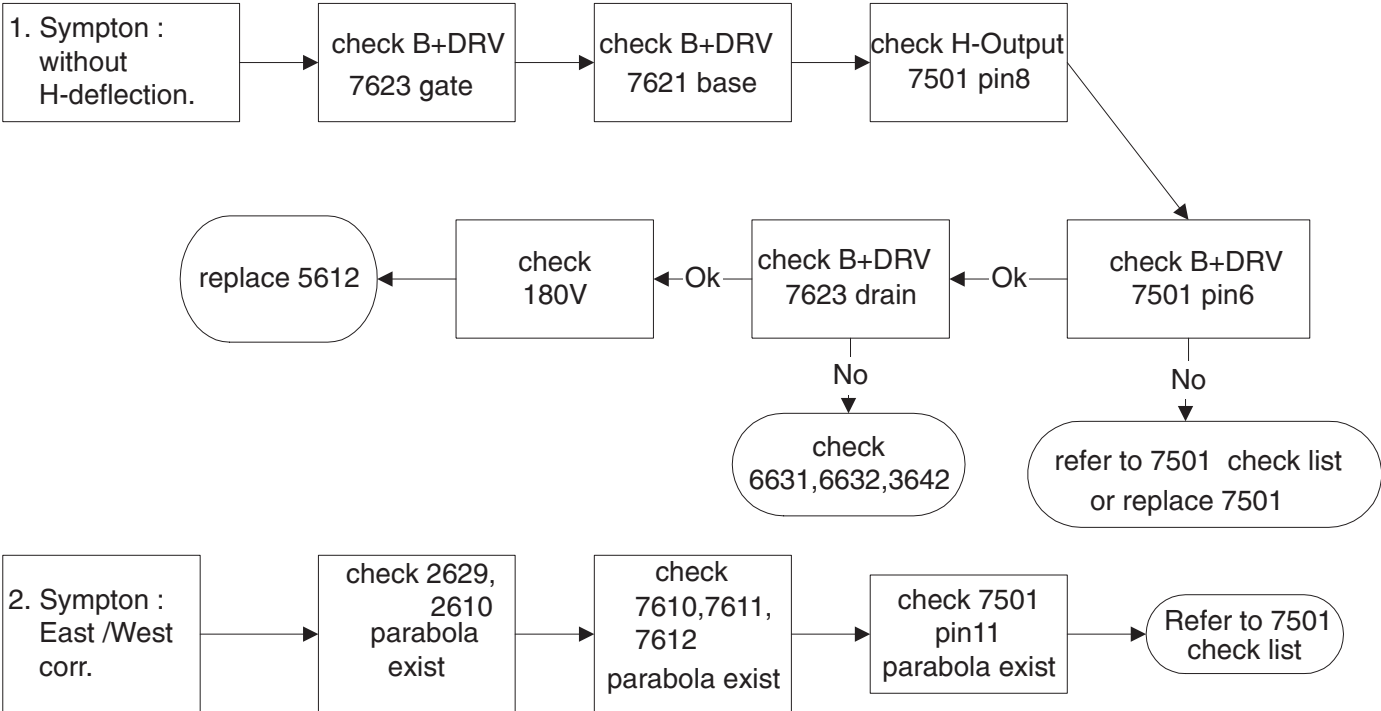
3. Sympton:
abnormal sound



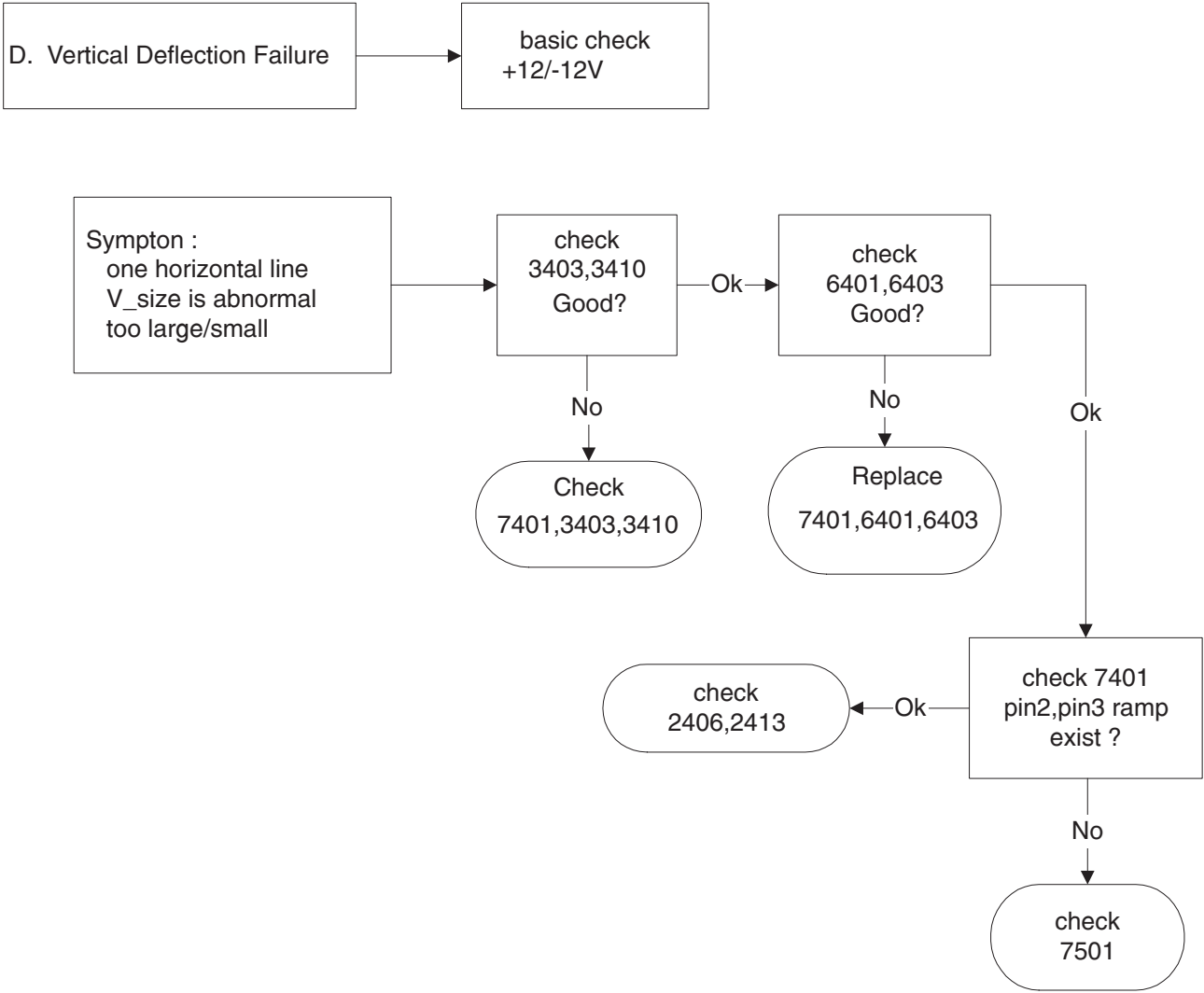
Repair Flow Chart

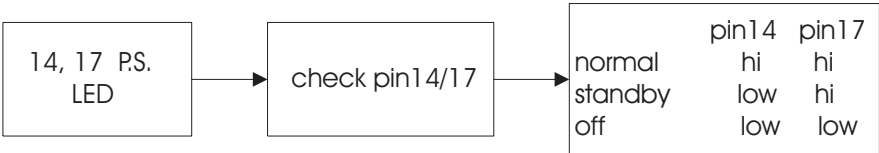
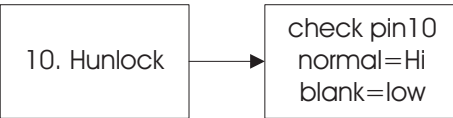
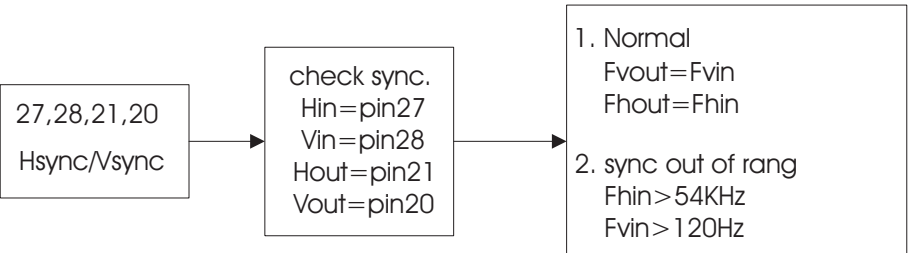
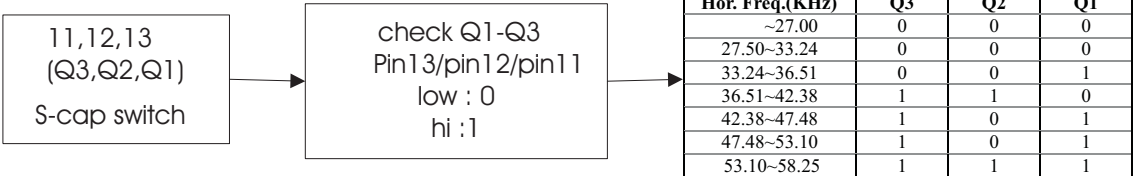
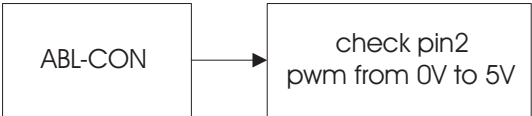
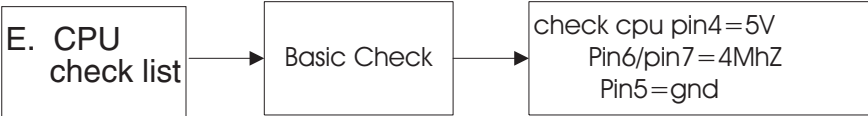


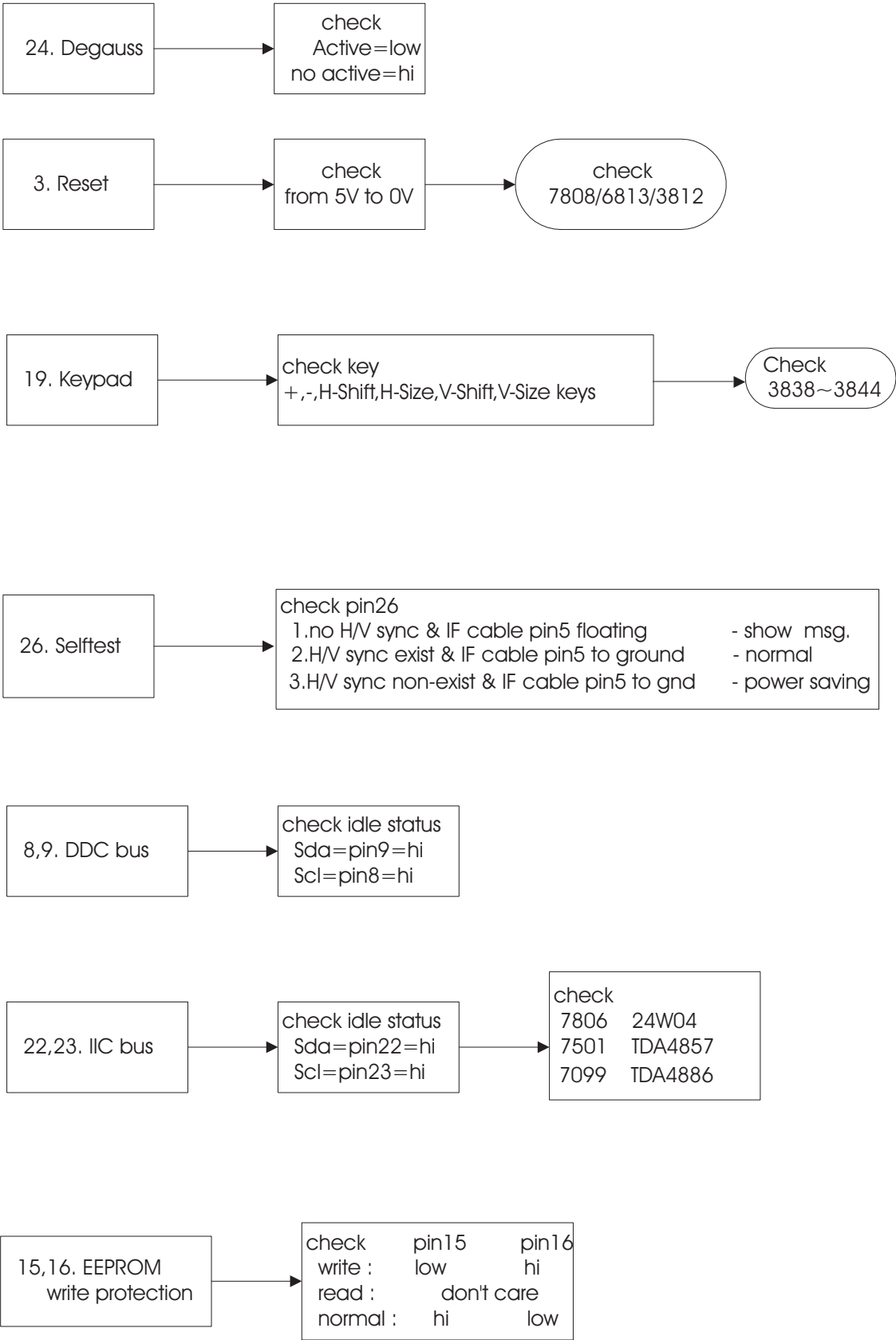
C. Horizontal deflection
output repair flow :

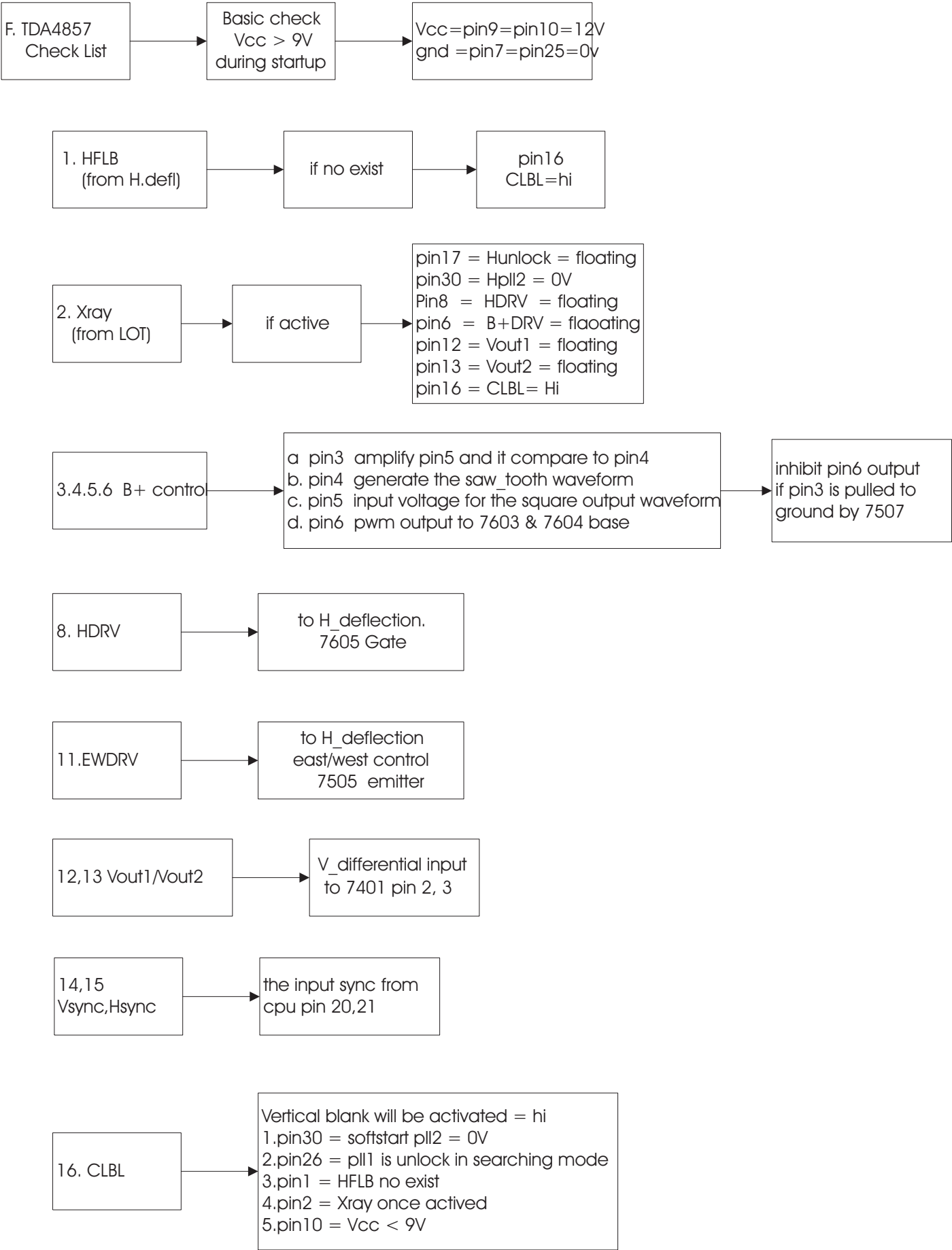


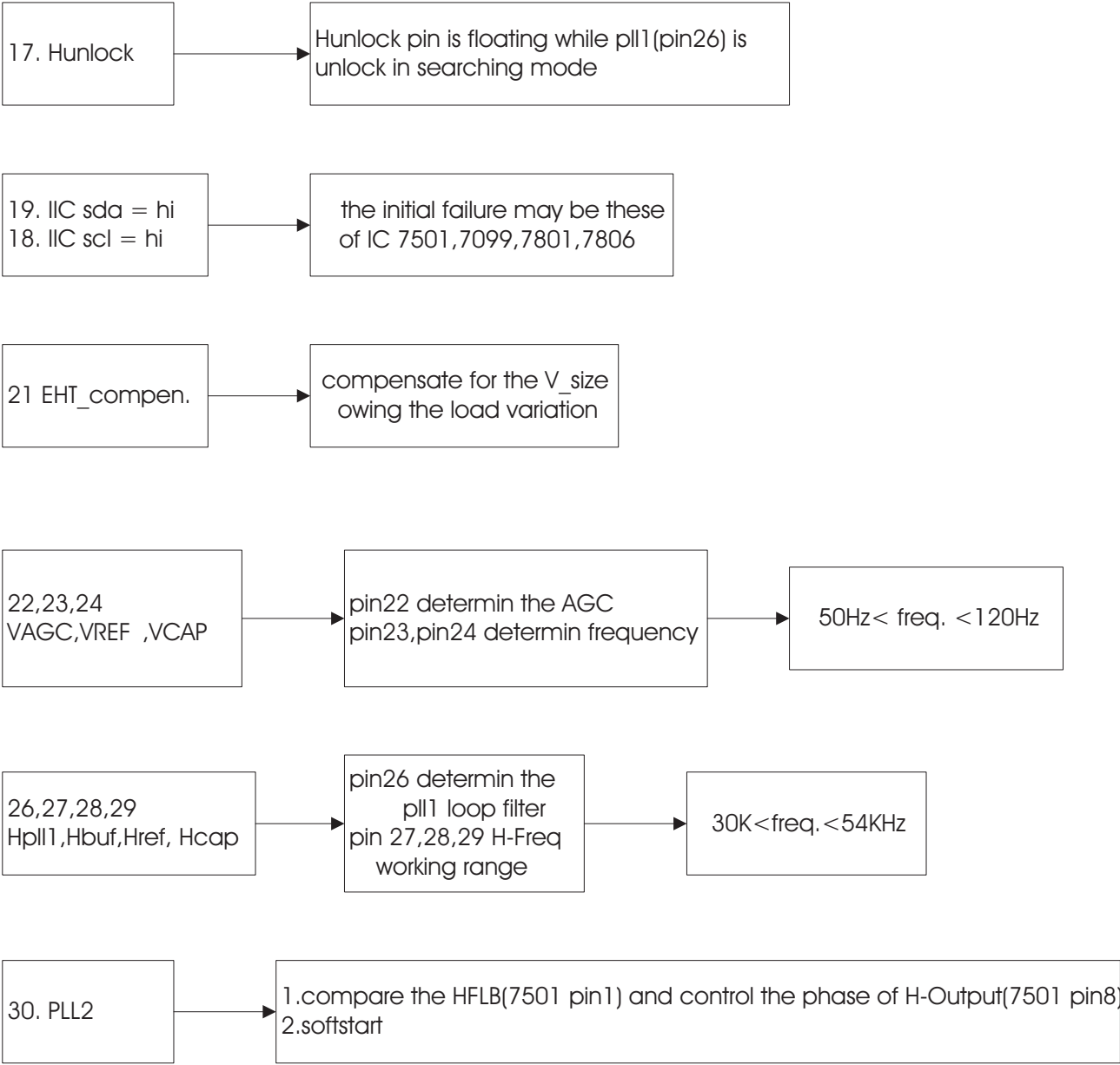
Repair Flow Chart











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CM2300 14" 54KHz AUTOSCAN COLOUR MONITOR

FEATURES / BENEFITS

- EXTREMELY HIGH MTBF (OVER 50K HRS, EXCLUDING CRT)
- PROFESSIONAL LOOK, WITH NON-FLAMMABLE CABINET (94V-0)
- USER'S CONTROLS
 - . FRONT MOUNTED CONTROLS FOR EASY ACCESS
- BETTER DISPLAY PERFORMANCE
 - . FINER CRT DOT PITCH (0.28 MM)
 - . FULL SCREEN SIZE APPLICATION
 - . REAL MULTI-FREQ.
- POWER SAVING MANAGEMENT SYSTEM
- MAXIMIZED CONTAINER LOADING
- VESA DDC1 AND 2B
- LOW EMISSION MPR II

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1.0 Introduction

This document is related to the 14" AUTOSCAN (VGA above and Max. resolution 1024X768 by 60HZ refresh) color monitor for world-wide destination.

2.0 General description

The AUTOSCAN analog color monitor is specified as a display peripheral within an IBM PC, PS/2 ,VGA and advance VGA compatible system.

The AUTOSCAN analog color monitor is to operate at horizontal line rates between 30 to 54 KHz and refreshment rate between 50 to 120 Hz, can be applied to all RGB analog computers within this scanning frequencies.

The AUTOSCAN analog color monitor is intended to be a finished product, basically a display device mounted inside a plastic enclosure which provides the aesthetic mechanical, ergonomic and safety requirements.

2.1 General condition

The unit will produce a usable image after switching-on, measurements are to be carried out with a full stabilized set after 30 minutes warm-up at room temperature of 25° C. Repetitive power on/off cycles are allowed though should be avoided within 4 sec.

3.0 Electrical characteristics

3.1 Signal interface

The AUTOSCAN analog color display has an analog video interface to operates at a multi-frequencies timing in several display modes.

3.1.1 Input requirements

A. Input signals

Video : Analog level
Sync. : Separated sync. with TTL level
Polarity : Positive or negative

B. Signal input level

Video : 0.7 Vp-p 75 ohms (for individual of R,G and B signals must not deviate 0.015 Vp-p from each other for balance of white pattern)
Sync : TTL level
(between 0 and 0.6 V to be considered as low level ,between 2.3 and 5.0 V as high level)

C. Impedance

Video : Terminated with 75 ohms
Sync : Terminated with 4.7K ohms pull down resistors.

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3.1.2 Signals input

The input video signals are applied to the display device through a video cable which is fixed to the monitor (standard cable length 1.5M).

Video input cable :
15 pin D-shell male connector type AMP 211350-1(3 rows)
or equivalent, with pin assignment as follows :

Pin assignment of 15P D-SUB connector

Pin nbr.	Assignment
P1	Red video input
P2	Green video input
P3	Blue video input
P4	GND
P5	For selftest (PC Ground)
P6	Red video ground
P7	Green video ground
P8	Blue video ground
P9	Not connected -- No pin
P10	Sync ground
P11	GND
P12	Bi-directional Data (SDA)
P13	H SYNC
P14	V SYNC (VCLK)
P15	Data clock (SCL)

3.1.3 Factory preset modes:

PRESET VIDEO RESOLUTION AND SYNC POLARITIES

Preset modes	H - Freq.	V - Freq.	H-sync	V-sync
640 x 400	31.47K	70(VGA)	-	+
640 x 480	31.47K	60(VGA)	-	-
640 x 480	37.5 K	75(VESA)	-	-
800 x 600	46.875K	75(VESA)	+	+
800 x 600	53.674K	85(VESA)	+	+
1024 x 768	48.363K	60(VESA)	-	-

3.2 Timing requirements

The AUTOSCAN color monitor must be capable of displaying standard resolutions within the vertical(refresh) frequency range of 50 to 120 Hz and horizontal scan range of 30 - 54 KHz.

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TIMING FOR CM2300 104S

REFERENCE PATTERN GENERATOR : CHROMA 2135

* According VESA version 1.0 release 0.6p

TABLE 1: 31.5 KHz/70 Hz, 640 X 400, pixel=25.175 MHz

Horizontal				Vertical			
Frame border	=	0		Frame border	=	0	
Total size	=	31.778	us	Total size	=	14.268	ms
Display size	=	25.422	us	Display size	=	12.711	ms
Rear porch	=	1.907	us	Rear porch	=	1.112	ms
Sync width	=	3.813	us	Sync width	=	0.064	ms
Sync.polarity	=	-		Sync.polarity	=	+	

TABLE 2: 31.469KHz/59.940 Hz, 640 X 480, pixel=25.175 MHz

Horizontal				Vertical			
Frame border	=	0		Frame border	=	0	
Total size	=	31.778	us	Total size	=	16.683	ms
Display size	=	25.422	us	Display size	=	15.253	ms
Rear porch	=	1.907	us	Rear porch	=	1.049	ms
Sync width	=	3.813	us	Sync width	=	0.064	ms
Sync.polarity	=	-		Sync.polarity	=	-	

TABLE 3: 37.5KHz/75 Hz, 640 X 480, pixel=31.5 MHz

Horizontal				Vertical			
Frame border	=	0		Frame border	=	0	
Total size	=	26.667	us	Total size	=	13.333	ms
Display size	=	20.317	us	Display size	=	12.800	ms
Rear porch	=	3.810	us	Rear porch	=	0.427	ms
Sync width	=	2.032	us	Sync width	=	0.080	ms
Sync.polarity	=	-		Sync.polarity	=	-	

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TABLE 4: 46.875 KHz/75 Hz, 800 X 600, pixel=49.500 MHz

Horizontal				Vertical			
Frame border	=	0		Frame border	=	0	
Total size	=	21.333	us	Total size	=	13.333	ms
Display size	=	16.162	us	Display size	=	12.800	ms
Rear porch	=	3.232	us	Rear porch	=	0.448	ms
Sync width	=	1.616	us	Sync width	=	0.064	ms
Sync.polarity	=	+		Sync.polarity	=	+	

TABLE 5: 48.363 KHz/60 Hz, 1024 X 768, pixel=65 MHz

Horizontal				Vertical			
Frame border	=	0		Frame border	=	0	
Total size	=	20.677	us	Total size	=	16.666	ms
Display size	=	15.754	us	Display size	=	15.880	ms
Rear porch	=	2.462	us	Rear porch	=	0.600	ms
Sync width	=	2.092	us	Sync width	=	0.124	ms
Sync.polarity	=	-		Sync.polarity	=	-	

TABLE 6: 53.674 KHz/85.061 Hz, 800 X 600, pixel=56.250 MHz

Horizontal				Vertical			
Frame border	=	0		Frame border	=	0	
Total size	=	18.631	us	Total size	=	11.756	ms
Display size	=	14.222	us	Display size	=	11.179	ms
Rear porch	=	2.702	us	Rear porch	=	0.503	ms
Sync width	=	1.138	us	Sync width	=	0.056	ms
Sync.polarity	=	+		Sync.polarity	=	+	

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3.2.1 Horizontal scanning

Scanning frequency : 30 - 54 KHz
H-shift range : ± 10 mm Min. (for preset modes only)

3.2.2 Vertical scanning

Scanning frequency : 50 - 120 Hz
V-shift range : ± 8 mm min. (for preset modes only)

3.3 Power supply

The display device maintains the specified performance in the range described as bellows :

Type	Mains current	Mains Voltage	Mains freq.
Universal	1.5A Max.	90 - 264 VAC	47 - 63 Hz
230V version	0.7A Max.	195 - 264 VAC	47 - 63 Hz
115V version	1.5A Max.	90 - 132 VAC	60 ± 3 Hz

Power consumption : 72 Watts Max.
Power cord length : 1.5M
Power cord type : 3 leads plug power cord
with protective earth plug or IBM Hooded

3.4 Power saving management system

Mode	Signal			Compliance	Power	Recovery
	H-Sync	V-Sync	Video	Requirement		Time
On	Active	Active	Active	Mandatory	≤ 72w	N/A
Stand-by	Inactive	Active	Blanked	Mandatory	≤ 15w	≤ 3 sec.
Suspend	Active	Inactive	Blanked	Mandatory	≤ 15w	≤ 3 sec.
Off	Inactive	Inactive	Blanked	Mandatory	≤ 8w	Normal

Remark: Transition time from "ON" to any power saving mode will have 5 seconds delay.

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3.5 CRT Description

This display unit employs a high resolution CRT complying with the following specifications :

- Dimensions : 14 inches, 29.1mm neck diameter, flat/square screen
- Pitch : 0.28mm dotted with black matrix
- Deflection angle : 90 degrees
- Light transmission : 57% (dark glass)
- Face treatment : Anti-glare, anti-static
- Implosion protection : By P-Mini-rim-band.
- EHT : 24.5 ± 1 KV (Ib=0)
- Visible screen area : 280 +/-3 mm x 210 +/- 3mm

3.6 RGB Amplifier

3.6.1 Video amplifiers

- Dot Rate : 65 MHz
- Over / undershoot : 10% Max. (Transient response)
- Sag : 5% Max.(pulses of 0.70H)
- Black level shift : 5% Max.

3.6.2 Brightness and Contrast

Reference mode 53.674 KHZ/85 HZ full white pattern.

DISPLAY LIGHT OUTPUT

Brightness	Contrast	Light output (full white)
Minimum	Minimum	≤ 0.3 FL
Center	Maximum	30 ± 5 FL.
Maximum	Maximum	37 ± 5 FL.

3.7 Variation of image size (For preset modes only)

Due to brightness change : ≤ 1.0 %
(Set brightness control at center click, turn contrast control from Min. to Max.)

Due to aging (25° C, 300 hrs) : ≤ 2.0 %

Due to mains voltage variation (± 10%) : ≤ 1.0 %

3.8 Degaussing

An automatic degaussing circuit is provided which requires no intervention. The degaussing activated at the time of switch on or switch on again after switching off degaussing circuits for longer than 30 minutes.

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3.9 Phosphor protection
The display device is sufficiently protected against the burning of phosphors in case of repetitive power cycling or absence of horizontal deflection.

3.10 Low emission requirements (MPR-II)

Items	Band I ELF (rms)	Band I I VLF (rms)
Alternating Electric Field	MPR-II < 25 V/M	MPR-II < 2.5V/M
Magnetic Field	MPR-II < 250 nT	MPR-II < 25 nT
Electrostatic Potential	< ± 500 V	

Band I : 5 to 2K HZ.
Band II : 2K to 400K HZ.
Test procedure according to MPR-II and E.S.P. test method.

3.11 Display data channel : DDC1/2B (VESA STANDARD)

The DDC HEX Data (refer sheet 190) should be written into the DDC IC (24LC21 or equivalent) Hard ware DDC or EEPROM page 2 , 0 ~ 127 bytes (Soft ware DDC) by EEPROM writer or equivalent method.

4.0 Display image (CRT facing east)

The monitor is aligned in a magnetic cage having the following magnetic field components :
Northern Hemisphere : H = 0, V = 450 mG, Z = 0
Southern Hemisphere : H = 0, V = -500 mG, Z = 0

Conditions for visual testing, unless otherwise stated:
Input video signal - 700 mVpp cross hatch
Brightness control - center click position
Contrast control - maximum position

4.1 Display resolutions

See 3.1.3

4.2 Image size (For preset modes only)

The dimensions of guaranteed display area to be measured along the picture center of horizontal and vertical axis of the screen as listed below: (preset modes only, refer to fig. 1)

Width : 250 ± 3 mm
Height :188 ± 3 mm

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4.3 Image centering deviation (For preset modes only)

With respect to fig. 2, the target relationships are the following :

$IA - BI \leq 6 \text{ mm}$ $IC - DI \leq 6 \text{ mm}$

Note : This centering is adjustable by the end-user.

4.4 Picture shift control range (For preset modes only)

H-shift range : $\pm 10 \text{ mm min.}$
V-shift range : $\pm 8 \text{ mm min.}$

4.5 Picture tilt

With respect to Fig. 3, Tilt to be measured on extremes of center line from bezel.

$IA - BI : \leq 2 \text{ mm}$

4.6 Geometrical distortions (For preset modes only)

It is acceptable that pincushion, trapezoid, rhomboid, rotation and various waves distortions must remain within the limits of tolerance as in fig. 4, where $A = B = 3.0 \text{ mm}$. $A+B < 5 \text{ mm}$
 $C = D = 3.0 \text{ mm}$. $C+D < 5 \text{ mm}$

The waviness of any vertical or horizontal shall be less than 1.0 mm over a 50 mm distance.

4.7 Image non-linearity pattern with
12 equal blocks along horizontal axis,
9 equal blocks along vertical axis. (see Fig. 1) (For preset modes only)

Overall : $\leq 10 \%$ (each horizontal and vertical)

Deviation of Two adjacent block : $\leq 6 \%$

$$\text{H. non-linearity} = \frac{X. \text{ Max.} - X. \text{ ave.}}{X. \text{ Max.}} \times 100\%$$

$$\text{V. non-linearity} = \frac{Y. \text{ Max.} - Y. \text{ ave.}}{Y. \text{ Max.}} \times 100\%$$

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4.8 Mis-convergence
The maximum convergence error to be measured on a white spot or white display line to represents the maximum distance between the energy centers of any two primary colors. (See Fig. 6)

CONVERGENCE SPEC.

Zones	0.28 mm CRT
Zone C	0.15 mm
Zone A	0.25 mm
Zone B	0.35 mm

4.9 Focus check (53.674 KHZ / 85.061 HZ)

Adjust brightness control to center click and contrast control to get 25 FL at full white pattern , then generate “@” characters to cover entire of the picture
the characters should be clearly identified in all display area. (See Fig. 7)

4.10 Luminance uniformity

condition : With full white pattern, set contrast control at maximum position and brightness control at center click position.

The center of the display is 30 FL. , the Max. deviation of the screen should not exceed 25% .

4.11 White color adjustment

Based on the 1931 CIE chromaticity diagram (x,y)
coordinates of white display on screen center should be:

For 9300° K X = 0.281 ± 0.015
 Y = 0.311 ± 0.015

Check conditions :

Set brightness control at center click position and contrast at maximum position.

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4.12 Color tracking on full white pattern

To adjust the luminance output from 3 to 30 FL. By turning the contrast control (brightness control at center click position), the color co-ordinates should not deviate more than the following tolerance when compare to display center:

$X = X \text{ (center)} \pm 0.015$
 $Y = Y \text{ (center)} \pm 0.015$

4.13 Purity

Test patterns : Full white / Red / Green / Blue.
Conditions : As stated in item 4.0, the purity must be checked under specific destinations of earth magnetic environments and the monitor to be well degaussed.

After warming-up time of 30 min. , no color stains may occur in above four patterns.

4.14 Moire'e

Condition: Displaying a full white pattern, at any preset mode , the display size to be set as Fig.1

The clouding effect must not rise to disturbing levels in anywhere of the screen with luminance setting from 15 to 35 FL.

4.15 Blemish

Blemish shall be in accordance with CRT specification.

5.0 Mechanical characteristics

5.1 User controls

- Power ON/OFF switch
 - Contrast
 - Brightness
- Digital control buttons :
- Shift function (function select of 1st and 2nd level controls)
 - 1st level : H-Shift , H-Size , V-Shift , V-Size
 - 2nd level : Trapezoid , Pincushion , Recall (Store)
 - (H-Shift) (H-Size) (V-Size)
 - "+" or "-" key : Increase or decrease setting
 - H-Shift + V-Size : Factory mode entry. At Power on, simultaneously pressed 3 seconds, shift LED will flash 3 times.
- * Power off/on return to user mode

CLASS NO.		14" CM2300 GS-III CMTR					
00-02-18		TYPE : 104S11/89 (COCA)		8639 000 10477			
		BRAND : PHILIPS (54K)					
NAME	William Ou	SUPERS.	25	590	13	10	A4
TY		CHECK	DATE 00-02-18	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

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REMARK:

- 1. When "Shift" LED is off, control is at 1st level, and when LED is on, control is at 2nd level.
Press H-shift + V-shift keys simultaneously 2 seconds for "Shift" function .
- 2. "Shift" LED will flash 0.1 second at one time when
function keys (E.G. H- Shift , H-Size,...etc.) are pressed,
and it should flash continuously when adjusting "+" or "-" key
is at end of range, releasing "+" or "-" key, all adjusted
values will be stored automatically after 10 seconds. (at user mode)
- 3. "Selftest function" disconnect the I/F cable to enter the selftest mode.
At this mode we can see raster displayed .brightness at Max. (Pin 5 at PC should be ground)
- 4. At factory adjust mode, press Shift key (shift LED on) then press V -size,
the modified data will be stored in factory preset areas on EEPROM and
shift LED will flash two times.

5.2 Connectors and cables

5.2.1 Power cord type : 3 leads plugable power cord with
protective earthed plug or IBM Hooded

Length : 1.5 m ± 50 mm (exc. connector)
Safety requirements : See following.

Countries	Approval		
	Mains plug	Wire	Connector
Germany	VDE	VDE	VDE
Switzerland	--	SVE	SVE
Belgium	CEBEC	--	--
Sweden	SEMKO	SEMKO	SEMK O
Finland	EI	--	EI
Norway	NEMKO	NEMKO	--
Denmark	DEMKO	DEMKO	DEMKO
Italy	OVE	--	OVE
Netherlands	KEMA	KEMA	KEMA
U.K.	ASTA	HAR	ASTA
U.S.A.	UL	UL	UL
Canada	CSA	CSA	CSA
Australia	SAA	SAA	SAA

5.2.2 Signal cable

Length of video : 1.5 m ± 50 mm flying with 15 pin PS/2
D -shell socket

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- 5.3 Tilt and swivel base
- Tilt angle : 5 ° forward and 15° backward
- Swivel rotation : 90 ° leftward or rightward

6.0 Environmental characteristics

The following sections to define the interference and susceptibility condition limits that might occur between external environment and the display device.

6.1 Susceptibility of display to external environment

- 6.1.1 (A) Operating limits
- Temperature : 0 °C to 40 °C
- Humidity : 20 to 80% (W/O condensation)
- Air pressure : 700 ~ 1100 mbar
- (B) Non-operating limits (storage)
- Temperature : -25 °C to 65 °C
- Humidity : 20 to 90 % (W/O condensation)
- Altitude : 300 to 1100 mbar

6.1.2 Transportation packages

- A) Carton box
- A-1 Size (with pedestal)
- 432(W)×456(D)×419(H)
- A-2 Carton paper : double wall AB fute corrugate board, color brown
- Bursting : 19.3 kg/cm² min
- Compression : 550 kg min

- B) Transportation conditions
- B-1 Container loading (separated pedestal)

Q'ty	Container size			
	40'		20'	
	W/ palette		W/ palette	
	Yes	No	Yes	No
Layers	5	5	5	5
Sets per layer	6	6	6	6
Sets per block	30	30	30	30
Blocks per container	22	22	10	10
Total sets	660	660	300	300

CLASS NO.		14" CM2300 GS-III CMTR			
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B-2 Transportation standards

Standards	EU / Asia versions PHILIPS's UAN-D1400		U.S.A. version NSTA
Drop test	Height	61 cm	30 inch
	Sequence	Right/Back/Top faces	1 corner. 3 edges. 6 faces
	Result	- Electrical function OK. - Mechanical function OK. - No serious damage in set.	
Vibration test	Sequence	a . 5~200Hz. 0.25G operating random vibration 30 min/axis, 3 axes b. 5~200Hz. 0.73 packing random vibration 30 min/axis, 3 axes	
	Result	- Electrical function OK. - Mechanical function OK. - No serious damage in set.	
Shock test	For design evaluation only. Half sine shock : 100G, <3m sec. 6 shocks Temp. : 23°C Humidity : 60 % Air pressure : 100 kpa Standard : PHILIPS's UAN-D636		

6.2 Display disturbances from external environment

6.2.1 ESD Disturbances
According to EN50082-1 (also refer to IEC801-2 for detail).

6.3 Display disturbances to external environment

The disturbances induced by the display and tolerated by the environment are defined as follows :

6.3.1 Ionizetic radiation
Completely fulfilled International Commission of Radio logical Protection (ICRP) requirement 0.5 mR/Hr.

Actually the set can reach 0.1 mR/Hr.

CLASS NO.		14" CM2300 GS-III CMTR			
		TYPE : 104S11/89 (COCA)		8639 000 10477	
00-02-18		BRAND : PHILIPS (54K)			
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6.3.2 EMI
Can comply with FCC part 15, DOC C108.8 and EN55022

7. Safety tests

7.1 Dielectric strength (Hi-pot test)
According to IEC950, UL1950 and CSA 22.2 No 950

7.2 Resistance for protective earthing
According to IEC950

7.3 Leakage current
According to IEC950, UL1950 and CSA22.2 No. 950

7.4 Grounding
According to IEC950, UL1950 and CSA22.2 No. 950

8.0 Certifications

8.1 Safety
The monitors comply with the following safety standards:

- IEC950
- UL1950
- DHHS 21 CFR, subchapter J
- CSA-22.2 NO. 950
- GERMANY ZH1/618(GS), ISO 9241-3,-8

8.2 EMI (Electromagnetic Interference)
The monitor comply with the following EMI standards :

- EN55022
- FCC Part 15
- DOC C108.8

8.3 Fulfil approbation requirements
Destination basis, set can fulfil following requirements:

Countries	Safety	EMI
Germany	TUV,GS	CE
Sweden	SEMKO	----
Norway	NEMKO	----
Denmark	DEMKO	----
Finland	FIMKO	----
Spain	HOMOLOGATION	CE
UK	BEAB	CE
U.S.A.	UL , DHHS	FCC
Canada	CSA	DOC
Japan	----	VCCI

CLASS NO.		14" CM2300 GS-III CMTR			
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9.0 Reliability

9.1 Mean time between failures
MTBF to be calculated according to Military standard MIL-HDBK-217C.

MTBF ≥ 50,000 Hours (Excluding CRT)

$$\text{PRACTICE of MTBF} = \frac{\text{TOTAL HRS (POWER ON)} \times \text{TOTAL SETS}}{\text{NBR. OF FAILED SETS}}$$

10.0 Quality assurance requirements

10.1 Acceptance test

According to MIL-STD-105D level II,
AQL : 0.4 (Major)
: 1.0 (Minor)

Customer acceptance : UAW 0377/40
criteria

11.0 Service ability

The service ability of this monitor should fulfil the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT - 0361

CLASS NO.		14" CM2300 GS-III CMTR			
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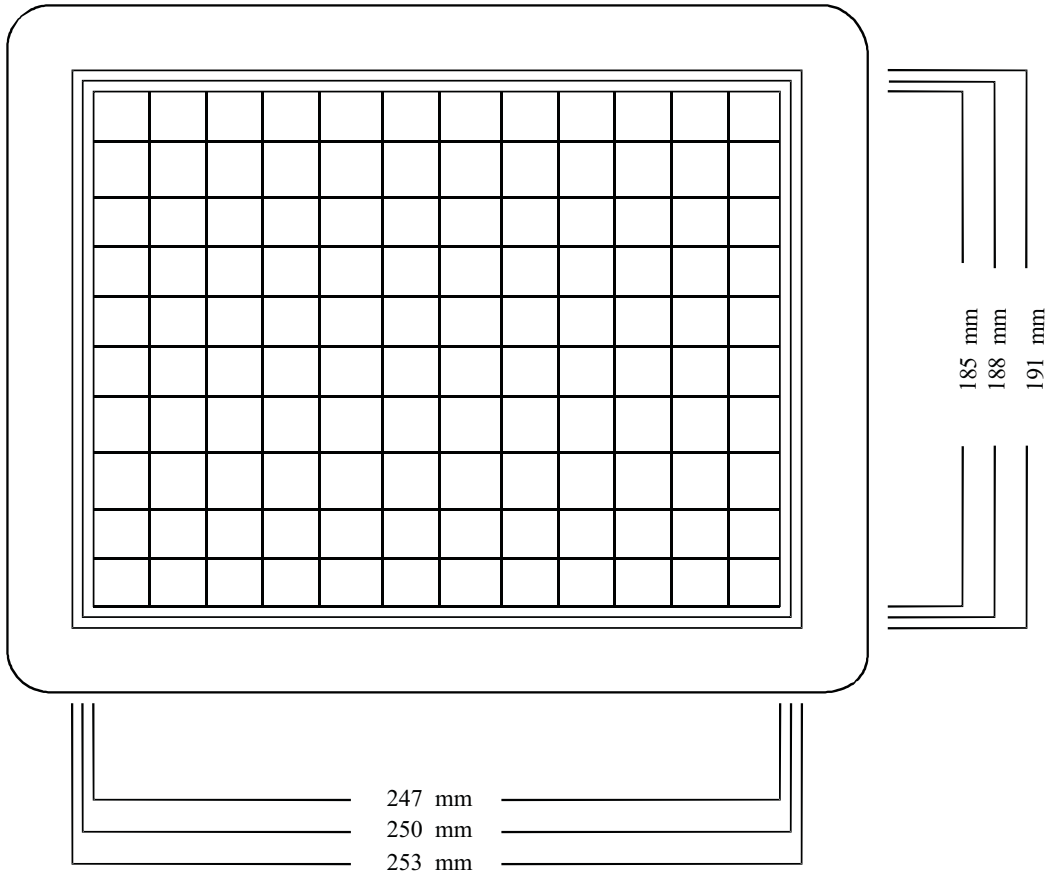


FIG-1 IMAGE DIMENSION

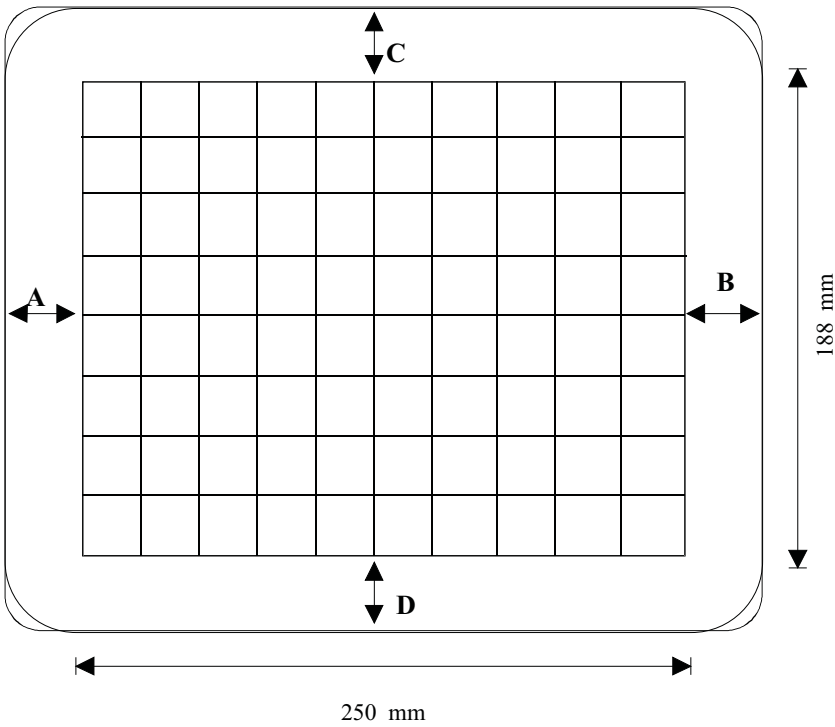
CLASS NO.		14" CM2300 GS-III CMTR			
00-02-18		TYPE : 104S11/89 (COCA)		8639 000 10477	
		BRAND : PHILIPS (54K)			
NAME William Ou		SUPERS.		25	590 — 19
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$|A-B|$ AND $|C-D| < 6 \text{ mm}$

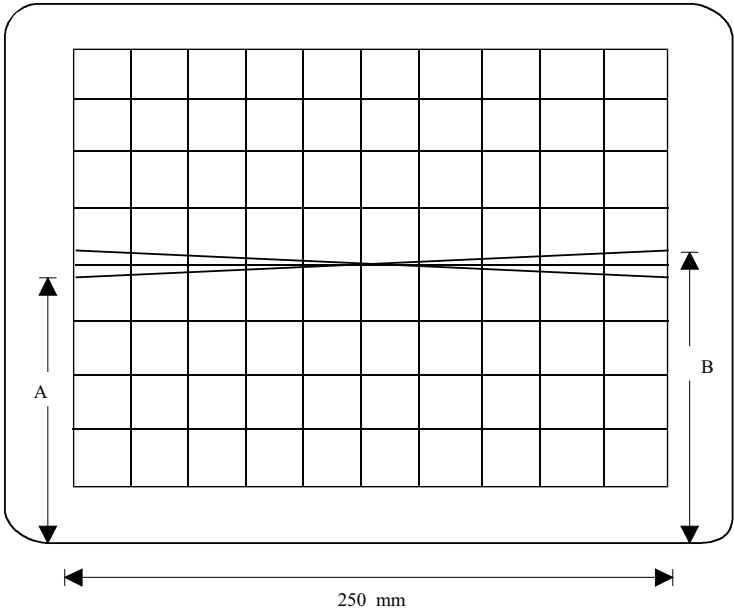
FIG-2 IMAGE CENTERING

CLASS NO.		14" CM2300 GS-III CMTR			
		TYPE : 104S11/89 (COCA)		8639 000 10477	
00-02-18		BRAND : PHILIPS (54K)			
NAME William Ou		SUPERS.		25	590 — 20
TY		CHECK	DATE 00-02-18	10	A4
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$|A-B| \leq 2 \text{ mm}$

FIG-3 IMAGE ROTATION

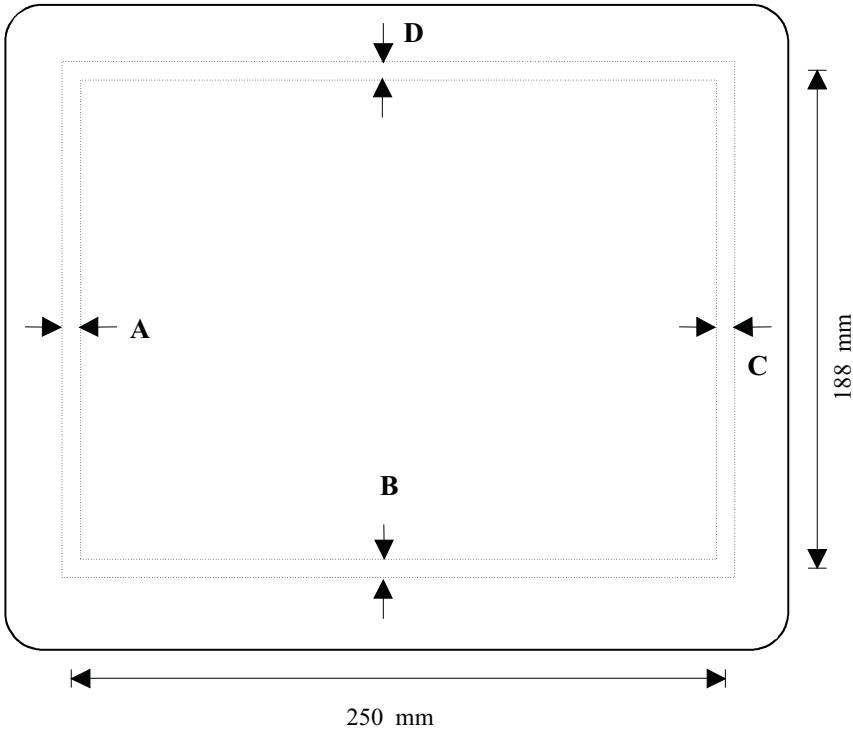
CLASS NO.		14" CM2300 GS-III CMTR			
		TYPE : 104S11/89 (COCA)		8639 000 10477	
00-02-18		BRAND : PHILIPS (54K)			
NAME William Ou		SUPERS.		25	590 — 21
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$A=B=C=D \leq 3.0 \text{ mm}$

$|A| + |C| \leq 5 \text{ mm}$

$|B| + |D| \leq 5 \text{ mm}$

FIG-4 IMAGE GEOMETRY

CLASS NO.		14" CM2300 GS-III CMTR			
		TYPE : 104S11/89 (COCA)		8639 000 10477	
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NAME William Ou		SUPERS.		25	590 — 22
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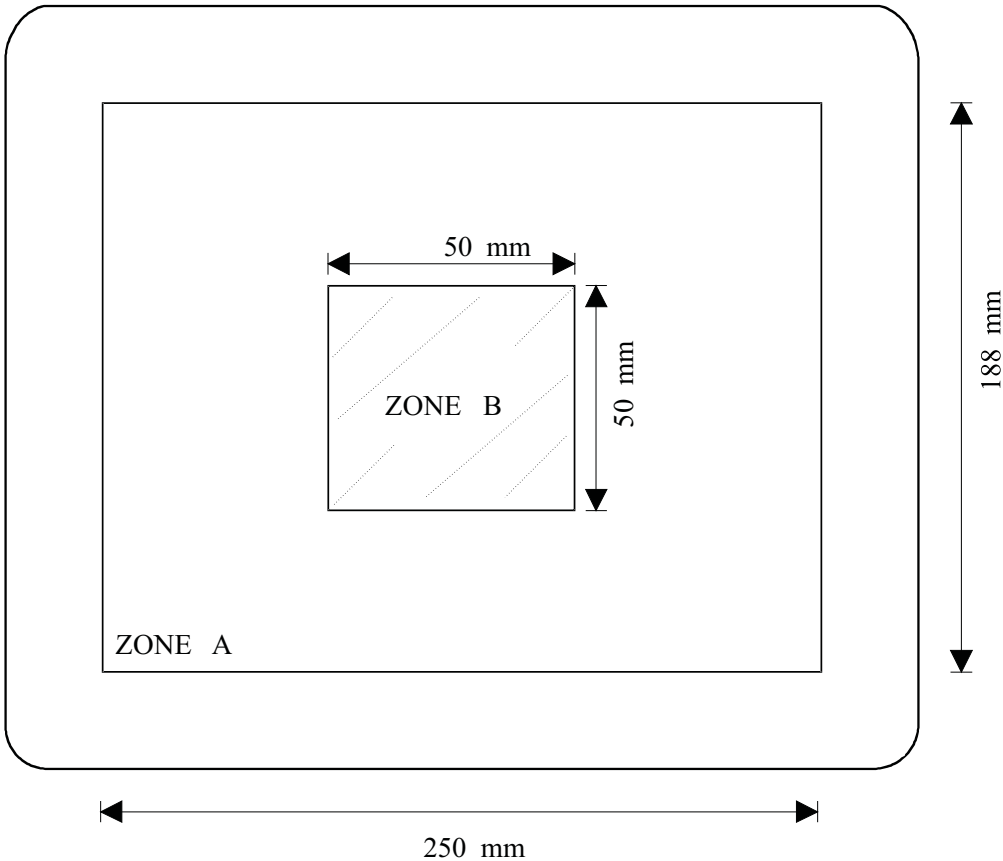


FIG-5 CONTRAST AND BRIGHTNESS MEASUREMENT AREA

CLASS NO.		14" CM2300 GS-III CMTR			
		TYPE : 104S11/89 (COCA)		8639 000 10477	
00-02-18		BRAND : PHILIPS (54K)			
NAME William Ou		SUPERS.	25	590 — 23	10 A4
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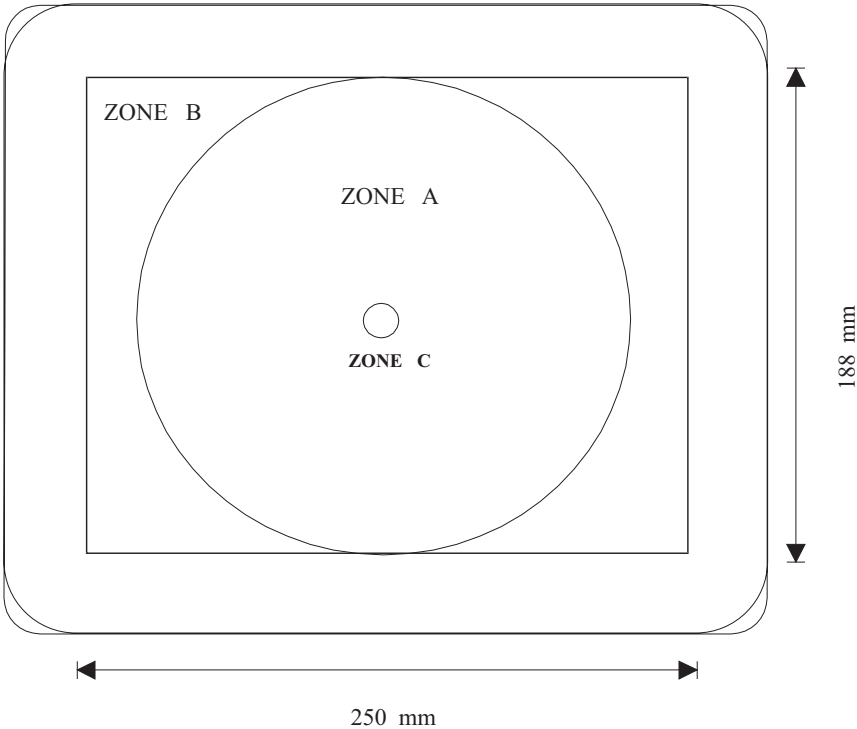


FIG-6 MISCONVERGENCE

CLASS NO.		14" CM2300 GS-III CMTR			
		TYPE : 104S11/89 (COCA)		8639 000 10477	
00-02-18		BRAND : PHILIPS (54K)			
NAME William Ou		SUPERS.		25	590 — 24
					10
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1 BYTE = 8BITS

LINE	HEX.DATA		7	6	5	4	3	2	1	0
0	0	0								
1	0	0								
2	7	C								
3	8	2								
4	8	2								
5	9	E								
6	9	2								
7	9	2								
8	9	C								
9	8	0								
A	7	C								
B	0	0								
C	0	0								
D	0	0								
E	0	0								
F	0	0								

Fig 7 CHARACTER FORMAT FOR FOCUS CHECK

CLASS NO.		14" CM2300 GS-III CMTR			
		TYPE : 104S11/89 (COCA)		8639 000 10477	
00-02-18		BRAND : PHILIPS (54K)			
NAME William Ou		SUPERS.		25	590 — 25
				10	A4
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TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous service may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an asterisk by the Ref. No. in the parts list and enclosed within a broken line * (where several critical components are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safely operated without danger of electrical shock.

* Broken line

Implosion

1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

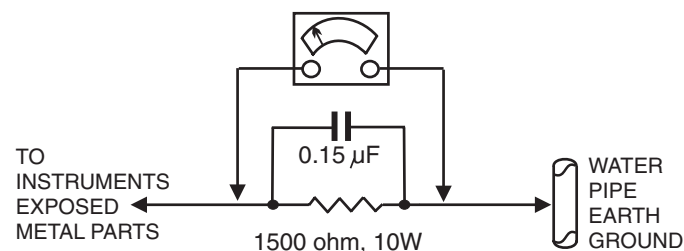
X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.

6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15uf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohmsy volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved tube.

Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

WARNING : Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE : The CRT DAG is not at chassis ground.

Go to cover page

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

* * Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

WARNING

Critical components having special safety characteristics are identified with a ▲ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ▲ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* Broken Line — ■ — ■ — ■

Technical Specification*

CRT

Size and deflection :14 inch/35.5cm,90°defection angle
Dot pitch/Grille pitch : 0.28mm
Horizontal pitch : 0.24mm

Tube type : Shadow mask, anti-glare, anti-static,
anti-reflection, light transmission
57%

Phosphor : P22

Recommended display
area : 9.8" x 7.4" / 250 x 188 mm

Maximum display area :10.8" x 7.9" / 274 x 201 mm

Scanning

Horizontal scanning : 30 - 54 KHz
Vertical scanning : 50 - 120 Hz

Video

Video dot rate : 65 Mhz
Input impedance
-Video : 75 Ohm
- Sync : 2.2 kOhm
Input signal levels : 0.7Vpp
Separate sync
Sync input signal : Composite sync
Sync polarities : Positive and negative

White Color Temperature

Chromaticity CIE coordinates:
at 9300 °k x = 0.281 y = 0.311

Physical Specifications

Dimensions : 347x367x360mm(including base)
347x367x310mm(excluding base)

weight : 9.5 Kg

Power supply : 90 - 264 VAC, 50/60HZ
Power consumption : <= 72 Watt

Operating condition

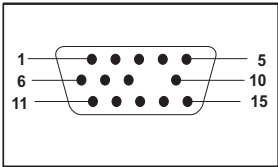
Temperature : 0 °C - 40 °C
Relative Humidity : 20 % - 80 %(W/O condensation)

Storage condition

Temperature : - 25 °C - 65 °C
Relative Humidity : 20 % - 90 %(W/O condensation)

Pin assignment :

The 15-pin D-sub connector(male) of the signal cable
(IBM systems) :



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	No pin
2	Green video input	10	Logic ground
3	Blue video input	11	Identification output - Connected to pin 10
4	Identification output - Connected to pin 10	12	Serial data line(SDA)
5	Ground	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

For The monitor is pre-set with 6 modes for optimal display size and centering as indicated in the following table:

Mode	Resolution (dots x lines)	Horizontal Freq. (KHz)	Vertical Freq. (KHz)	Remark
VGA	640 X 400	31.5	70	Non-interlaced
VGA	640 X 480	31.5	60	Non-interlaced
VESA / 75	640 X 480	37.5	75	Non-interlaced
VESA / 75	800 X 600	46.9	75	Non-interlaced
VESA / 85	800 X 600	53.7	85	Non-interlaced
VESA	1024 X 768	48.3	60	Non-interlaced

Automatic Power Saving

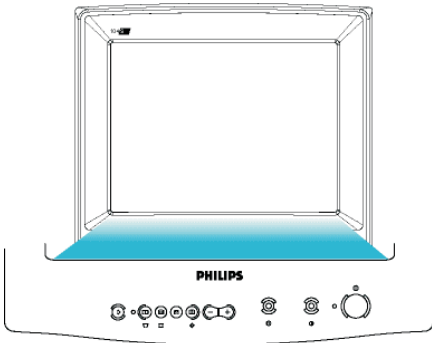
If you have VESA's DPMS compliance display card or software installed in your PC,the monitor can automatically reduce its power consumption when not in use. And if an input from a keyboard, mouse or other input devices is detected, the monitor will automatically "wake up". The following table shows the power consumption and signalling of this automatic power saving features :

Power Management Definition						
VESA's mode	VIDEO	H-SYNC	V-SYNC	POWER USED	POWER SAVING(%)	LED COLOR
ON	Active	Yes	Yes	< 75 W	0 %	Green
Stand-by	Blanked	No	Yes	< 15 W	80 %	Yellow
Suspend	Blanked	Yes	No	< 15 W	80 %	Yellow
OFF	Blanked	No	No	< 8 W	94 %	Amber

This monitor is Energy Star® compliant .As an ENERGY STAR® Partner, PHILIPS has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Installation and Control

Front View



For detailed information about the knobs and keys, please refer to controls

Front Controls

For an optimized adjustment of the picture following controls are available at the front.



Power

- 1.Press this knob, the green LED lights and the power is ON.
- 2.Press this knob again, the green LED disappears and the power is OFF.

Hotkeys

Contrast

- Rotate to adjust the picture contrast level.

Brightness

- Rotate to adjust the overall screen brightness as a compensation for ambient light.

Digital Controls

- + Press to adjust (increase) the function selected.
- Press to adjust (decrease) the function selected.
- To select the level of function.
- "SHIFT" LED off - control is on first level.
- "SHIFT" LED on - control is on second level.

The function pads:

- H-Shift: to adjust the horizontal position of the image.
- H-Size: to adjust the horizontal amplitude of the image.
- V-Shift: to adjust the vertical position of the image.
- V-Size: to adjust the vertical amplitude of the image.

Select level of the function pads:

- Trapezoid:to correct the trapezoid distortion of the image.
- Pincushion:to correct the barrel distortion of the image.
- Recall: to recall original factory preset mode.

Remarks:

- 1.When pressing any function pad, the "Shift" LED will flash once to indicate the function has been selected.
- 2.Once the limit of the adjustable range has been reached, the shift LED will flash continuously.

Adjustment

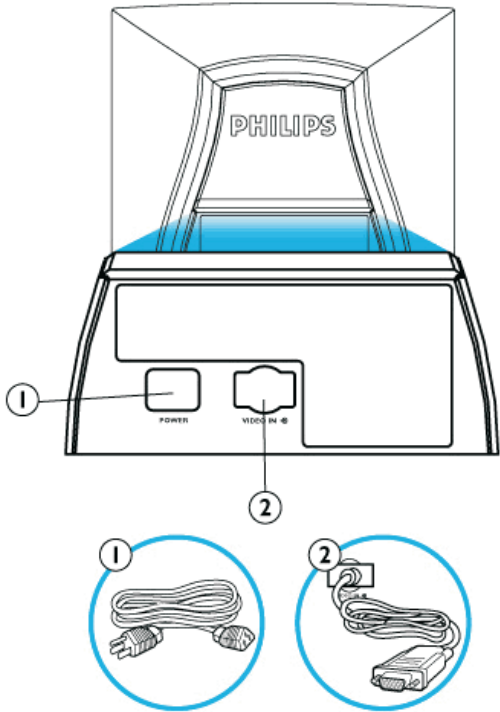
For the monitor is pre-set with 6 modes for optimal display size and centering as indicated in the following table:

	Mode	Resolution	Frequency		Remark
			H(KHz)	V(Hz)	
M01	VGA	640 x 400	31.5	70	Non-interlaced
M02	VGA	640 x 480	31.5	60	Non-interlaced
M03	VGA	640 x 480	37.5	75	Non-interlaced
M04	SVGA	800 x 600	46.9	75	Non-interlaced
M05	SVGA	800 x 600	53.7	85	Non-interlaced
M06	EVGA	1024 x 768	48.3	60	Non-interlaced

The set will save the user's setting parameters automatically. After 10 seconds of key-pad inactivity, the LED will flash twice to indicate the parameters being saved.



Press to recall factory preset mode. (at second level)

Rear View



- 1.Power in - attach power cable here.
- 2.Video In - this is a cable which is already attached to your monitor.Connect the other end of the cable to your PC.

Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol .
2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approximately 30 seconds).
3. **ESD** 
All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the ground of the unit. Keep components and tools also at this same potential.
4. When repairing a unit, always connect it to the AC Power voltage via an isolating transformer.
5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.
6. It is recommended that safety goggles be worn when replacing the picture tube.
7. When making adjustments, use plastic rather than metal tools. This will prevent any short-circuit or the danger of a circuit becoming unstable.
8. Never replace modules or other components while the unit is switched on.
9. Together with the deflection unit, the picture tube is used as an integrated unit. Adjustment of this unit during repair is not recommended.
10. After repair, the wiring should be fastened in place with the cable clamps.
11. All units that are returned for service or repair must pass the original manufacturer's safety tests.

Notes

1. The direct voltages and waveforms are average voltages. They have been measured using the Service test software and under the following conditions :
 - Mode : 640 * 480 (31.5kHz / 60Hz)
 - Signal pattern : grey scale
 - Adjust brightness and contrast control for the mechanical mid-position (click position)
2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

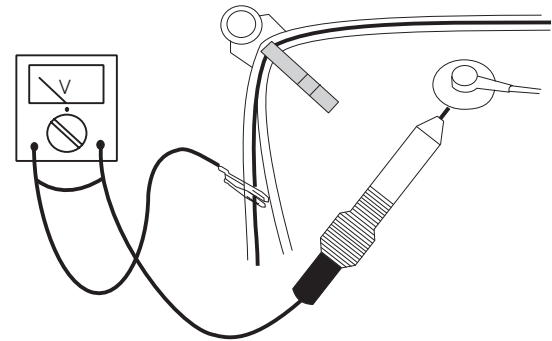


Fig.1

Mechanical Instructions

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0. General

To be able to perform measurements and repairs on the "circuit boards", these unit should placed in the service position first.

1. Remove the rear cover

- Open two lids with "-" type screwdriver. Refer to fig2 and fig3.
- Remove 4 screws with "+" type screwdriver.

2. Video panel

- Remove the metal shielding on rear side of Video panel by desolder lags of metal shielding.

3. Main panel

- Disconnect the degaussing coil from Main panel.
- Remove the video panel from CRT.
- Remove the "screw" of I/F cable from Main panel.
- Disconnect the CRT ground "1701" from Video panel.
- Disconnect the Hi-Pot cap from CRT.
- Disconnect the yoke wire connector "1601" from Main panel.
- Slide the main panel out of bottom tray.
- Place Main panel in service position as shown in Fig.1.
- Mount Video panel again on CRT.
- To connect Hi-Pot cap again.
- To connect "1701" again.
- To connect the yoke wire "1601" again.

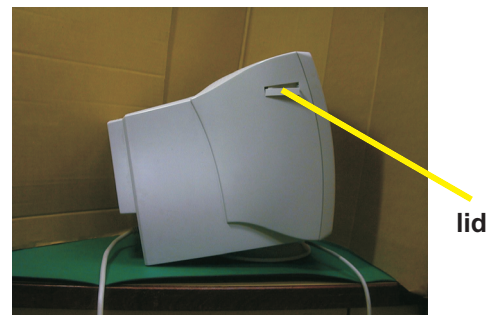
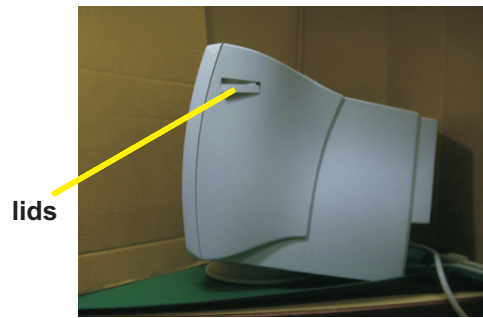


Fig.2

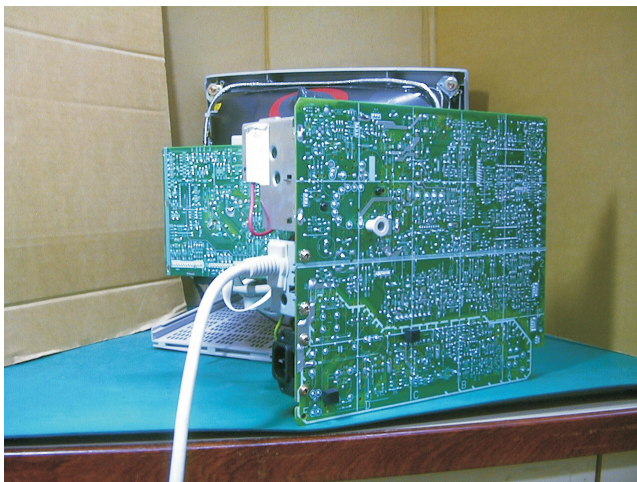


Fig. 1

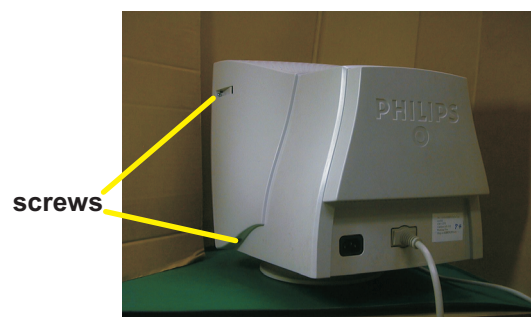
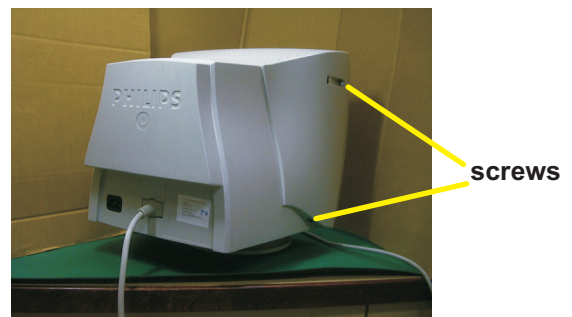
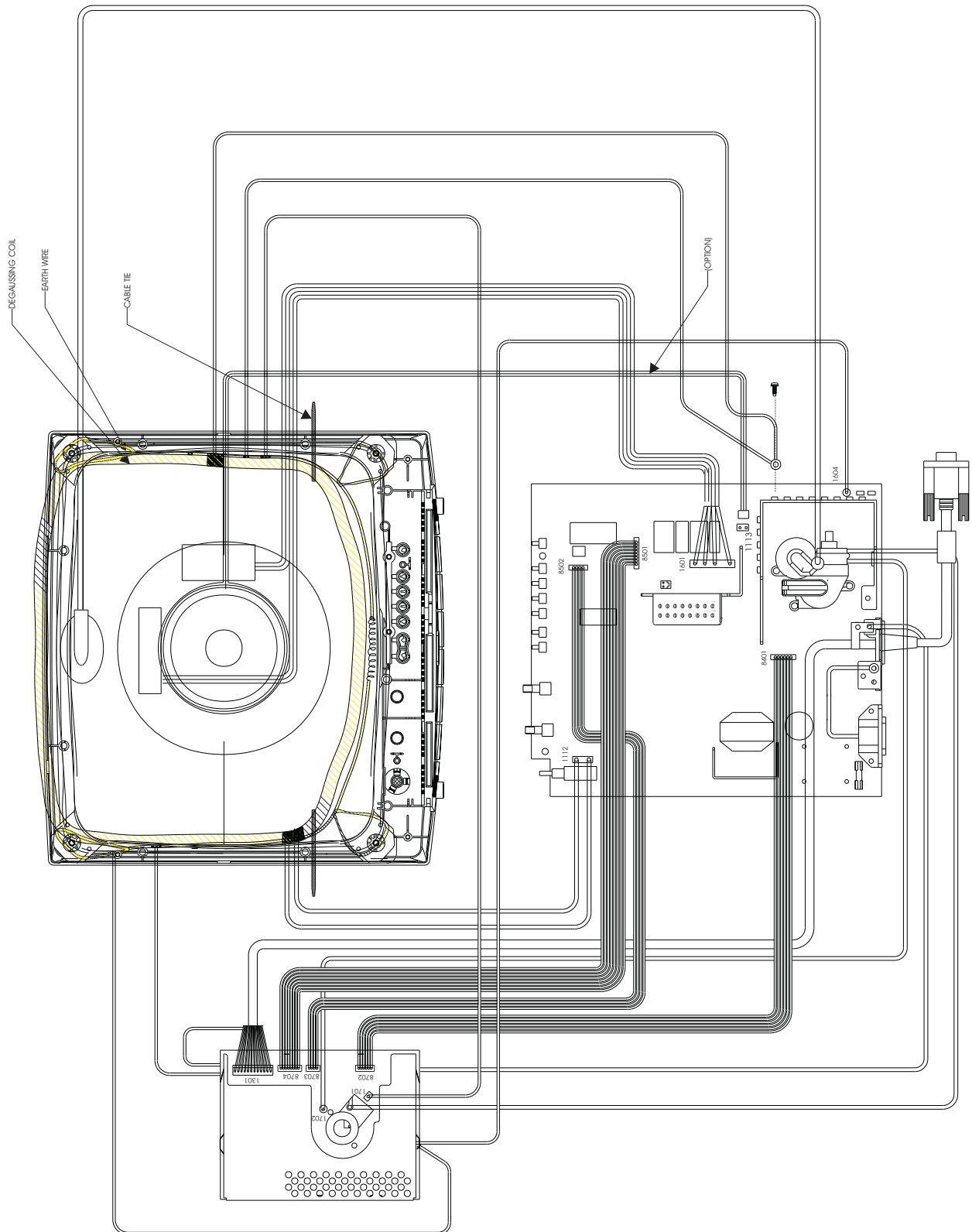


Fig.3

Wiring Diagram

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0. General:

When carrying out the electrical setting, in many cases a video signal must be applied to the monitor. A computer with :

- "ATI VGA1024" interface card
- PGA1024 (4822 212 30916)
- PGA1280 (4822 212 30917)

are used as the video signal source. The signal pattern are selected from the "service test software" package. see user guide 4822 727 19896 (ATI 1024), or 4822 727 20273 (PGA 1280).

0.1 Factory preset timing mode

Resolution	H.freq./V.freq.	H.	V.
640 x 400	31.5 kHz/70 Hz	-	+
640 x 480	31.5 kHz/60 Hz	-	-
640 x 480	37.5 kHz/75 Hz	-	-
800 x 600	46.9 kHz/75 Hz	+	+
800 x 600	53.7 kHz/85 Hz	+	+
1024 x 768	48.3 kHz/60 Hz	-	-

0.2 With normal VGA card:

If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5kHz/60Hz (only) as signal source.

0.3 AC/DC measurement:

The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz / 60 Hz resolution mode with test pattern gray scale.

1. B+ Supply voltage (3178), 81 VDC

- Set the brightness front control and the contrast front control to minimum.
- Set the trimming pot-meters 3178/3540 in the mechanical mid-position (this is a pre-setting).
- Connect a DC voltmeter between capacitor 2156 joint and ground.
- Switch on the monitor.
- Apply a video signal in the 640 x 480 with 31.5 kHz/60 Hz mode.
- Select the "crosshatch" pattern.
- Adjust trimming pot-meter 3178 until the DC voltmeter reads 81 V +/- 0.2V.

2. EHT voltage (3540)

- Connect a dc voltmeter between capacitor 2643 joint and ground.
- Apply a video signal in the 640 x 480 with 31.5 kHz/60 Hz mode.
- Select the "crosshatch" pattern. Adjust trimming pot-meter 3540 until the DC voltmeter reads : 67.5 +/- 0.2V (for PHILIPS CRT), But 68 V for CPT CRT

3. Monitor the following auxiliary voltages

+12V source across C2158	+12.7V +/- 0.5 VDC
- 12V source across C2162	- 12.7V +/- 0.5 VDC
+8V source across C2172	+8.0V +/- 0.4 VDC
+6V source across C2164	+6.2V +/- 0.3 VDC
-178V source across C2647	-178V +/- 8.0 VDC
+180V source across C2153	+183V +/- 1.5 VDC
+5V source across C2168	+5.0V +/- 0.25VDC
+80V source across C2156	+81.0 V +/- 0.5 VDC

4. General conditions for alignment

- 4.1 During all alignments, supply a distortion free AC mains voltage to set via an isolating transformer with low internal impedance.
- 4.2 Align in pre-warmed condition, at least 30 minutes warm-up with nominal picture brightness.
- 4.3 Purity, geometry and subsequent alignments should be carried out in magnetic cage with correct magnetic field.

Northern hemisphere : H=0, V=450 mG, Z=0
 Southern hemisphere : H=0, V=-500 mG, Z=0
 Equatorial Support : H=0, V=0 mG, Z=0

- 4.4 All voltages are to be measured or applied with respect to ground.

Note: Do not use heatsink as ground.

- 4.5 Adjust brightness controls to center position except for contrast control which should be set to MAX.

5. To access Factory Mode:

1. When "shift" LED is off, control is at 1st level, and when LED is on, control is at 2nd level.
2. "Shift" LED will flash 0.1 second at the time when function keys (e.g. H-Shift, H-Size,...etc.) are pressed, and it should flash continuously when adjusting "+" or "-" is at end of range. Releasing "+" or "-" key, all adjusted values will be stored automatically after 10 seconds.(at user Mode).
3. Factory preset mode entry, in power on status pressed "H-shift" and "V-size"simultaneously at 1st level. After 2 seconds the shift led will flash 3 times then the u-controller will entry factory mode. (turn off power and then on to return to user mode)
4. "Power down overrule" is only functional in power saving status and will be reset by switching off power.
5. At factory adjust mode, Press Shift key(shift LED on) then press V-size, the modified data will be stored in factory preset area on EEPROM and shift LED will flash two times.
6. At service, please entry Factory mode (pressing H-Shift and V-size simultaneously) first before using service factory alignment tools or auto-alignment to perform factory alignment.

6. Picture geometry setting for factory pre-set mode

6.1 General

- Pre-set contrast front control and brightness front control to mid-position.

6.2 53.7 kHz 85 Hz mode

(apply crosshatch pattern in 800 x 600 with 53.7 kHz/85 Hz mode)

6.3 Alignment of Horizontal and vertical geometry

6.3.1 Adjust the picture width to 250 mm.

6.3.2 Adjust the H-phase to center position.

6.3.3 Adjust the picture height to 188 mm.

6.3.4 Adjust V-Position to center

Adjust/Trapezium/pincushion

6.3.5 Adjust picture tilt I² CBUS for correct top/bottom lines.(Optional) (picture tube should be mounted without tilt w.r.t. cabinet)

6.3.6 Adjust the corner by I² C to straight vertical lines of the left and right edge.

6.3.7 Adjust the parallelogram by I² C to get optimum vertical line.

6.3.8 Adjust the unbalance pin by I² C to get optimum vertical line.

6.3.9 Adjust the unbalance Vertical linearity balance by I² C to get optimum vertical linearity balance.

6.3.10 Adjust the unbalance Vertical linearity by I² C to get optimum vertical linearity.

6.4 Adjust size / centering / trapezium / pincushion / parallelogram of all other preset modes via I² C bus

7. Alignments of VG2 cut-off point, white tracking:

7.1 External degaussing

7.1.1 Remove ferromagnetic measuring equipment, iron table, etc. in the neighborhood of the apparatus within the half meter.

7.1.2 positioned in the E-W direction, set has to be degaussed externally with coil 7122 704 18001(220V)

7.1.3 Slowly increase the distance between the picture tube and degaussing coil, keep the coil in parallel with the screen of CRT . When the distance is more than 2m, then turn off the degaussing current.

7.2 Apply 53.7Khz/85Hz 800 x 600 mode with 700mV 50x50mm white block pattern.

7.3 Set brightness control at center click and contrast at Maximum

Set R,G,B cut-off at 50% (EEPROM preload value)

R,G,B gain at 28(dec) (EEPROM preload value)

ABL at 50% (EEPROM preload value)

Via I² C bus , set 7099 TDA 4886 contrast to minimum

7.4 With the help of a factory calibrated color analyzer CA100 set LOW R,G,B scale 100=0.12FL, X=281, y=311.

Adjust VG2(screen) until brightness gun at 100 on low brightness scale.

7.5 Adjust the R,G,B cut - off for all gun readings to get 100 on low brightness scale.

7.6 Set 7099 TDA4886 contrast value at 63. (dec)

7.7 Set CA100 high R,G,B scale 100 = 50 +/- 1FL

7.8 Adjust R,B gain so that blue and green have the same readings as red on high brightness scale.

7.9 Set contrast at minimum and repeat 7.5, 7.6, 7.7, 7.8 until RGB three guns get same readings on low and high brightness scale.

7.10 Apply full white pattern,adjust ABL via I2C to reach 30 +/- 1FL (contrast at Max.)

7.11 Check full white at contrast and brightness at minimum, the foreground shall be extinguished.

8. Focus adjustment

Apply a signal of " @ " character. at 53.6 kHz/85 Hz mode set the brightness to mid-position , contrast to max - position and adjust the focus for optimal sharpness in the area within 2/3 from the screen center.

9. Loading DDC code

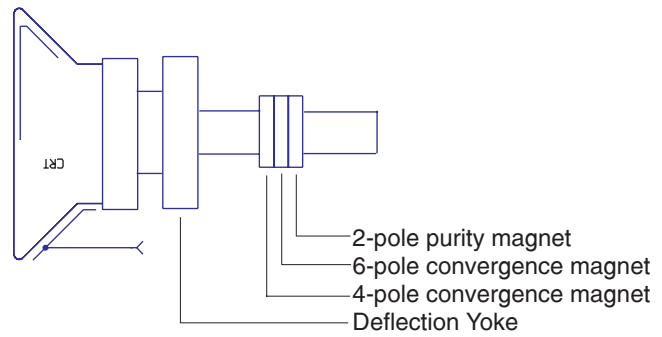
The DDC HEX data(refer sheet 190) should be written into the EEPROM (7806) by EEPROM writer or equivalent method. Software DDC(with 7806 model)

The DDC HEX data(refer sheet 190) should be written into the EEPROM (7806) ,0~127 bytes by EEPROM writer or equivalent method.

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10. Purity adjustment

- Make sure the monitor is not exposed to any external magnetic field.
- Produce a full red pattern on the screen, adjust the purity magnet rings on the PCM assy (on CRT) to obtain a complete field of the color red. This is done by moving the two tabs (2-pole) in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180 degree.
- Check by full green pattern and full blue pattern again to observe their respective color purity.



11. Static convergence

Introduction

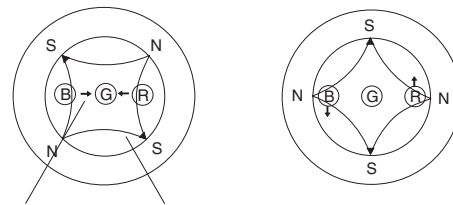
Slight deviation in the static convergence can be corrected by using two permanent pairs of magnets which are fitted around the neck of the CRT. These are the 4-pole magnet and the 6-pole magnet. The 4-pole magnet move the outermost electron beams (R and B) parallel in the opposite direction from the other. The 6-pole magnet moves the outermost electron beam (R, B and G) parallel in the opposite direction from the other. The magnetic field of the above magnets do not affect the center of the CRT neck.

Setting

- Before the static convergence setting can be made, the monitor must be switched on for 30 minutes.
- The focus setting must be made correctly.
- Signal: 640 * 480, 31.5 kHz/60 Hz mode.
- Set the tabs of the 4-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R and B electron beams.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- Pole magnet again.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- pole magnet again.

4-pole

Beam motion produced by the 4-pole convergence magnet

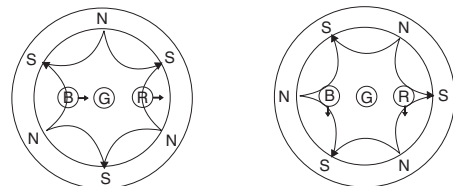


Beam displacement direction

Magnetic flux lines

6-pole

Beam motion produced by the 6- pole convergence magnet

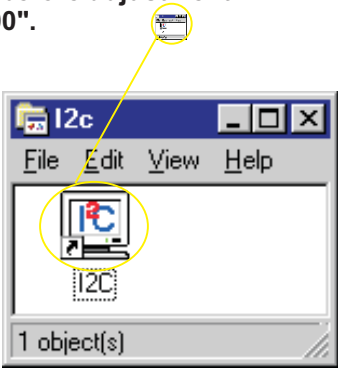


1.Introduce

The alignment kit is designed for CPU controller to adjust the screening size, shift, geometric,color temperature,...etc of monitor control function. and other function depend on your need.

2. Alignment environments :

- Windows 95 for alignment software (I2C-200.EXE and I2C-200.R00)
- Access Factory Mode of 104S Monitor before adjustment by using "I2C-200.EXE and I2C-200.R00".

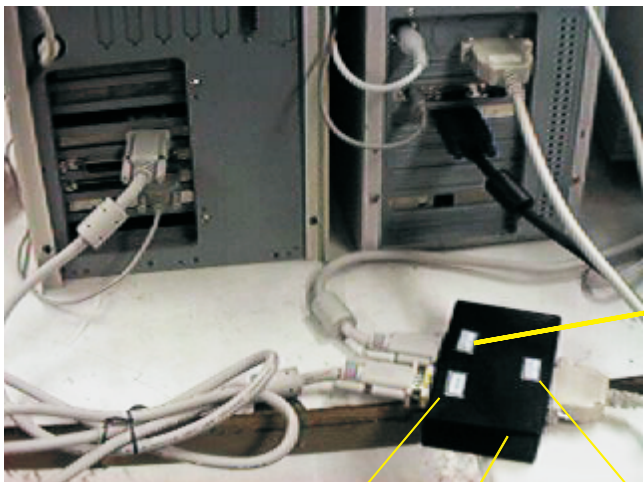


3.Installation

3.1 The followings are necessary for Alignment KIT application.

- An Intel 486 (or above) PC or compatible, Windows 95
- Pattern generator or the other PC
- The 15-pin D-sub connector of the signal cable(3 rows) x2
- The 25 pin connector of the printer cable (2 rows)x1
- Alignment KIT of 104S , Part number = 4822 310 11184 (= 4822 724 30280)
- I2C-200.EXE (3.5" Floppy Disk), Part number = 4822 711 00056 (= 4822 724 30290)
- I2C-200.R00 (3.5" Floppy Disk), Part number = 4822 711 00057 (= 4822 724 30300)

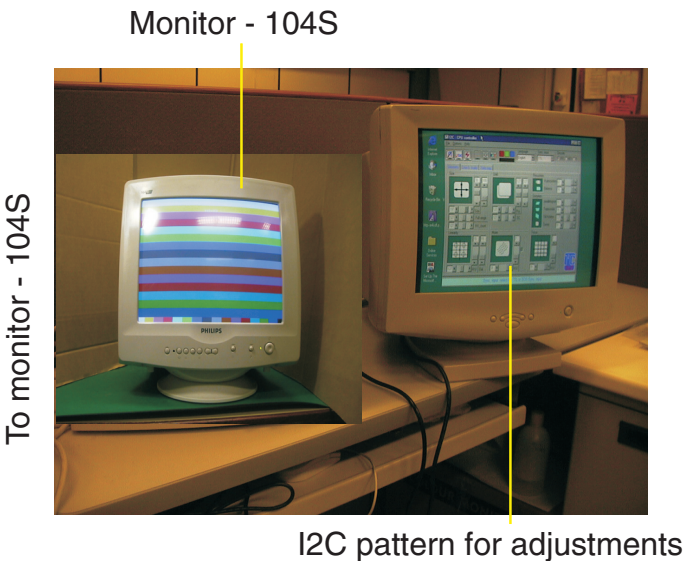
4. Connection, see figure as below.



To PC (the other PC)
or pattern generator

To Printer (main PC,
with I2C-200.EXE)

(Alignment Kit : code number is 4822 310 11184)



Monitor - 104S

To monitor - 104S

I2C pattern for adjustments

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In "MS DOS environment", make a sub-directory "I2C-200" in your Hard Disk "C", then copy "I2C-200.EXE" and "I2C-200.R00" into your sub-directory.

1. C:\MD I2C-200 , press "Enter"
2. C:\CD I2C-200 , press "Enter"

Bring up --> C:\I2C-200>

3. Insert disk 1 (I2C-200.EXE) into Drive A
4. C:\I2C-200>COPY A:\I2C-200.EXE , press "Enter"
5. Take disk 1 out from Drive A
6. Put disk 2 (I2C-200.R00) into Drive A
7. C:\I2C-200>COPY A:\I2C-200.R00 , press "Enter"
8. C:\I2C-200>I2C-200 , press "Enter"

In "MS Windows 95" environment:

1. Open: C:\I2C-200\Setup.exe
(As Fig. 1)
2. Click "OK" of Fig.1, bring up "Fig. 2"
3. Click "OK" of Fig. 2, bring up "Fig. 3"
4. Click "ICON" of Fig. 3, bring up "Fig. 4"
5. Click "OK" of Fig. 4, bring up "Fig. 5"
6. Double-click "ICON" of Fig. 5 to bring up Main Menu of CPU controller as "Fig. 6".

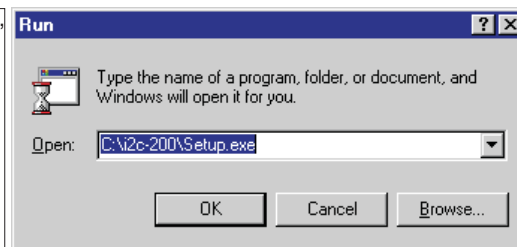


Fig. 1

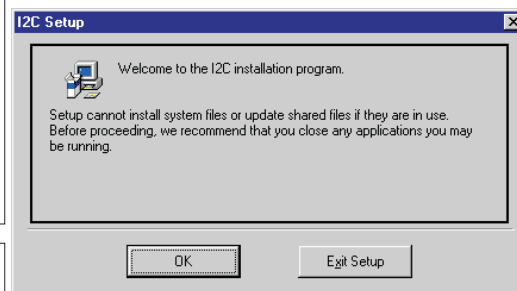


Fig. 2

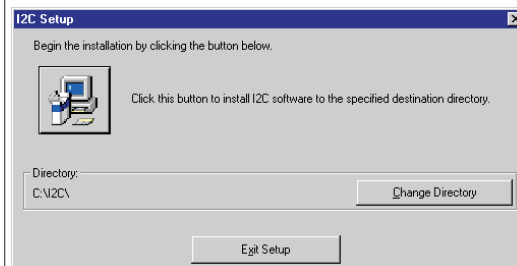


Fig. 3



Fig. 4

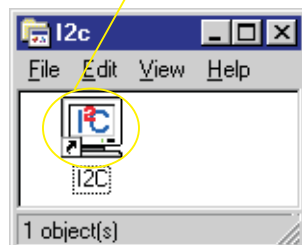


Fig. 5

1. Click the "Options", and then point to "Command code setup..."
2. Click "Command code setup", bring up Fig. 7.

Fig. 6

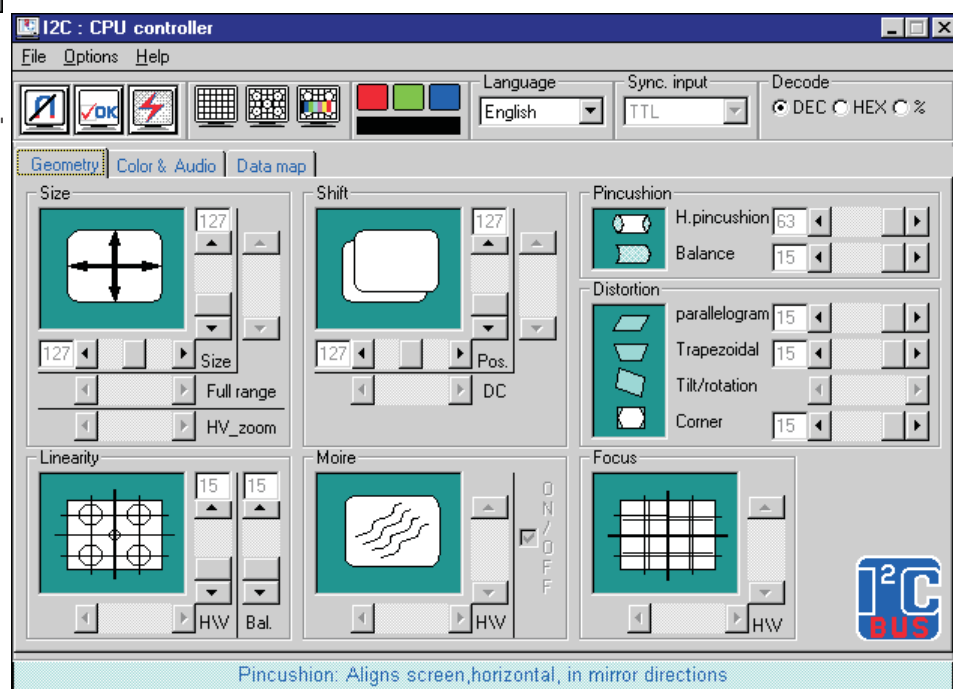


Fig. 7

Brightness/Contrast
*change the Max. value from 255 to 63 as below.

Brightness	Max. value	63
Contrast	Max. value	63

Disable ☐ sub-Contrast ----->

Disable ☐ OSD Contrast ----->

Command Code Setup

White | Size | Geometry | Effect | Miscellaneous

Brightness/Contrast

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Brightness	10	0	255
<input checked="" type="checkbox"/> Contrast	12	0	255
<input checked="" type="checkbox"/> sub-Contrast	E8	0	63
<input checked="" type="checkbox"/> ABL	E9	0	255
<input checked="" type="checkbox"/> OSD Contrast	EE	0	15

Color/Cut Off

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Red Video Gain	16	0	63
<input checked="" type="checkbox"/> Green Video Gain	18	0	63
<input checked="" type="checkbox"/> Blue Video Gain	1A	0	63
<input checked="" type="checkbox"/> Red Cut Off	6C	0	255
<input checked="" type="checkbox"/> Green Cut Off	6E	0	255
<input checked="" type="checkbox"/> Blue Cut Off	70	0	255

As default

Load default

Save as...

Load...

Cancel

OK

Click "Size", bring up Fig. 8.

Change the Max. value of Vertical Size from "255" to "127"

Change the Max. value of Vertical Position from "255" to "127"

Fig. 8

Command Code Setup

White | Size | Geometry | Effect | Miscellaneous

Size

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Horizontal Size	22	0	255
<input checked="" type="checkbox"/> Vertical Size	32	0	255
<input type="checkbox"/> Horizontal Full Size	E2	0	255
<input type="checkbox"/> Vertical Full Size	E7	0	255
<input type="checkbox"/> Full Size	E0	0	255

Shift

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Horizontal Position	20	0	255
<input checked="" type="checkbox"/> Vertical Position	30	0	255
<input checked="" type="checkbox"/> Horizontal DC Shift	EC	0	255
<input checked="" type="checkbox"/> Vertical DC Shift	ED	0	255

As default

Load default

Save as...

Load...

Cancel

OK

<-----Disable ☐ Horizontal DC Shift

<-----Disable ☐ Vertical DC Shift

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Fig. 9

Click "Geometry", bring up Fig. 9.

Change the Max. value of
Corner Correction
from "31" to "15" ----->

Command Code Setup

White Size Geometry Effect Miscellaneous

Distortion

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Parallelogram	40	0	15
<input checked="" type="checkbox"/> Trapezoidal	42	0	15
<input checked="" type="checkbox"/> Rotation/Tilt	44	0	255
<input checked="" type="checkbox"/> Corner Correction	E5	0	31

Pincushion

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Horizontal Pincushion	24	0	63
<input checked="" type="checkbox"/> Pincushion Balance	26	0	15

As default Load default Save as... Load... Cancel OK

Fig. 10

Click "Effect", bring up Fig. 10.

Disable ☐ Horizontal Linearity----->

Disable ☐ Horizontal Focus----->

Disable ☐ Vertical Focus----->

Disable ☐ Horizontal Moire

Disable ☐ Vertical Moire

Command Code Setup

White Size Geometry Effect Miscellaneous

Linearity

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Horizontal Linearity	2A	0	255
<input checked="" type="checkbox"/> Vertical Linearity	3A	0	15
<input checked="" type="checkbox"/> Vertical Linearity Balance	3C	0	15
<input checked="" type="checkbox"/> Horizontal Focus	EA	0	31
<input checked="" type="checkbox"/> Vertical Focus	EB	0	7

Moire

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Horizontal Moire	56	0	31
<input checked="" type="checkbox"/> Vertical Moire	58	0	7
<input type="checkbox"/> Moire on/off	E3		<input checked="" type="checkbox"/> Def. = 1

As default Load default Save as... Load... Cancel OK

Fig. 11

Click "Miscellaneous", bring up Fig. 11.

Disable ☐ Volume----->

Disable ☐ Mute on/off----->

Disable ☐ Language default----->

Disable ☐ Degauss----->

Command Code Setup

White Size Geometry Effect Miscellaneous

Audio

Command	Code	Min.	Max.
<input checked="" type="checkbox"/> Volume	F1	0	255
<input type="checkbox"/> Treble	F4	0	15
<input type="checkbox"/> Bass	F3	0	15
<input type="checkbox"/> Balance	F2	0	16
<input checked="" type="checkbox"/> Mute on/off	F0		<input type="checkbox"/> Def. = 1

Default

Command	Code	List...
<input type="checkbox"/> Rotary default	E4	Brightness
<input checked="" type="checkbox"/> Language default	E6	English
<input type="checkbox"/> Select Sync. Input	F5	TTL
<input checked="" type="checkbox"/> Color temperature	E1	9300K
<input checked="" type="checkbox"/> Degauss	DD	
<input checked="" type="checkbox"/> StoreAll	B0	
<input checked="" type="checkbox"/> Get current Value	F6	

As default Load default Save as... Load... Cancel OK

After setting of White, Size, Geometry and Effect,

- 1. Click "Save as", then bring up Fig. 12.
- 2. Fill in "File name", -- "104S.ccs" --
- 3. Click "OK", then the default value of 104S will be saved to sub-directly "i2c".

The default values of 104S are as below for Factory mode alignment.

size	H	Max. value	255	pincushion	H.pin	Max. value	63
	V	Max. value	127		Pin. bal.	Max. value	15
shift	H	Max. value	255	Distortion	parallel	Max. value	15
	V	Max. value	127		Trapezoidal	Max. value	15
Linearity	Vert. lin.	Max. value	15		Corner	Max. value	15
	Vert. Lin.Bal	Max. value	15				
Color							
	Brightness	Max. value	63				
	Contrast	Max. value	63				
	ABL	Max. value	255				
RGB gain				RGB cutoff			
	RED	Max. value	63		RED	Max. value	255
	GREEN	Max. value	63		GREEN	Max. value	255
	BLUE	Max. value	63		BLUE	Max. value	255

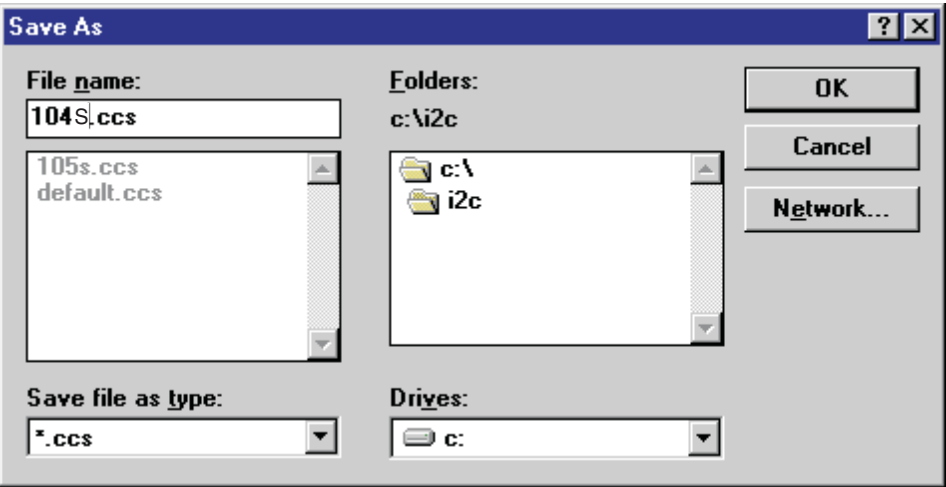


Fig. 12

- 1. Click the "File", and then point to "Load CCS".
Click "Load CCS", Bring up Fig. 13.
- 2. Click "104s.ccs".
Click "OK", then bring up the default setting for alignment as Fig. 6.

**** NEXT TIME ****

**Load 104s.ccs
for Electrical Alignment directly.**

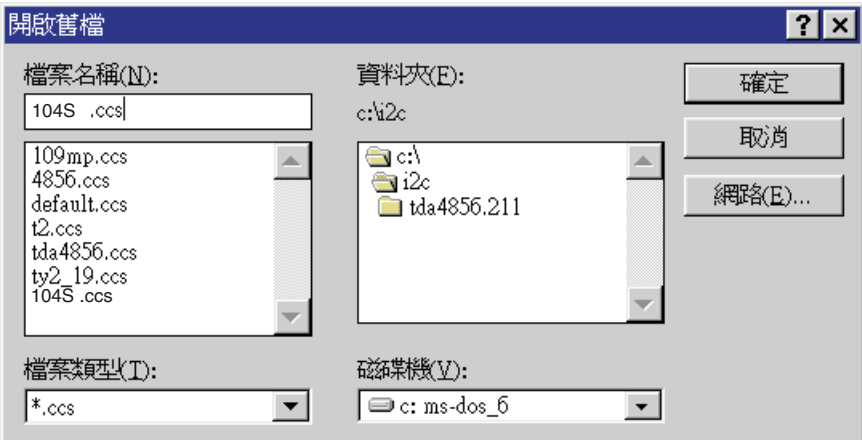


Fig. 13

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1. General

DDC Data Re-programming

In case the main EEPROM with Software DDC which store all factory settings were replaced because a defect, repaired monitor' the serial numbers have to be re-programmed.

It is advised to re-soldered the main EEPROM with Software DDC from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For the monitor : Standard Version 3.0
Structure Version 1.2

2. System and equipment requirements

- 1. An i486 (or above) personal computer or compatible.
 - 2. Microsoft operation system Windows 95/98.
 - 3. EDID301.EXE program (3138 106 10103) shown as Fig. 1
 - 4. Software DDC Alignment kits (4822 310 11184) shown as Fig. 2.
- The kit contents: a. Alignment box x1
b. Printer cable x1
c. D-Sub cable x1

Note: The EDID301.EXE (Release Version 1.54) is a windows-based program, which cannot be run in MS-DOS.



Figure 1 Diskette with EDID301.EXE

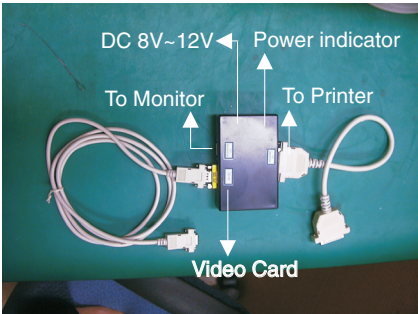
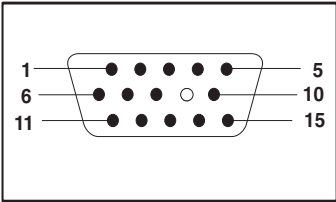


Fig. 2 Alignment Kits

3. Pin assignment

A. 15-pin D-Sub Connector

The 15-pin D-sub connector (male) of the signal cable on the 3rd row for DDC feature :



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	No pin
2	Green video input	10	Logic ground
3	Blue video input	11	Identification output - Connected to pin 10
4	Identification output - Connected to pin 10	12	Serial data line(SDA)
5	Ground	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

4. Configuration and procedure

Following descriptions are the connection and procedure for Software DDC, the main EEPROM can be re-programmed along with Software DDC by enabling "factory memory data write" function on the DDC program (EDID301.EXE).

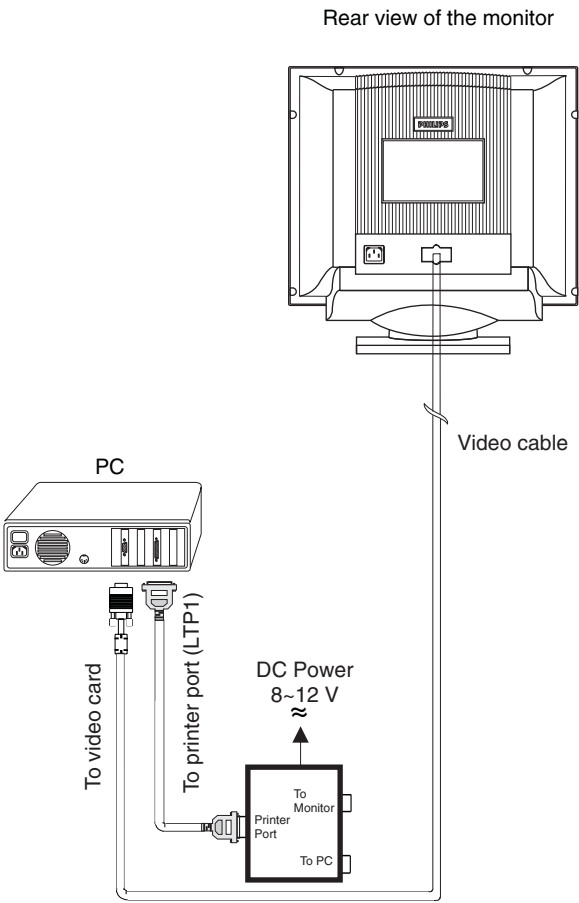
To access factory mode:

Turn off monitor (don't turn off PC)
- Press " " and " " simultaneously on the front control panel ,then press " ",wait till the OSD menu with characters " factory mode (below OSD menu)" come on the screen of monitor.

Initialize alignment box

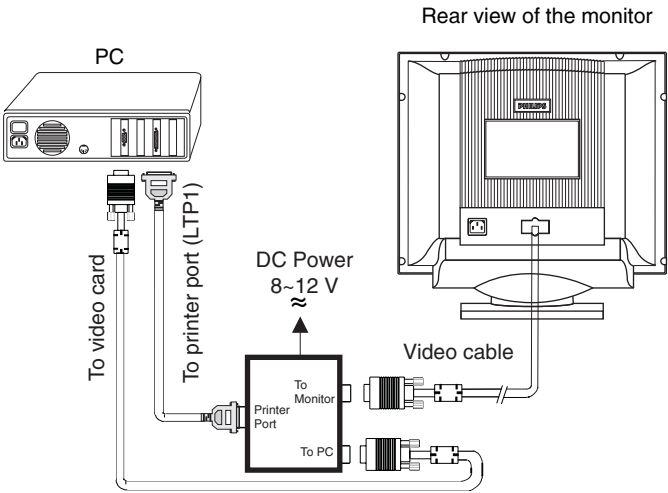
In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID301.EXE). Following steps show you the procedures and connection.

- Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
- Step 2: Connecting printer cable and video cable of monitor as Fig. A
- Step 3: Run the EDID301.EXE program until the main menu appears.
This is for initialize alignment box.



Re-programming Software DDC

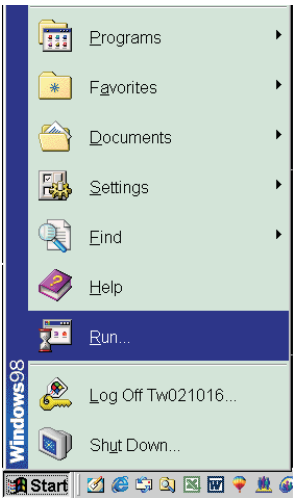
- Step 1: After initialize alignment box, connecting all cables and box as Fig. 3
- Step 2: Follow the steps on DDC re-programming instructions to starting re-programming.



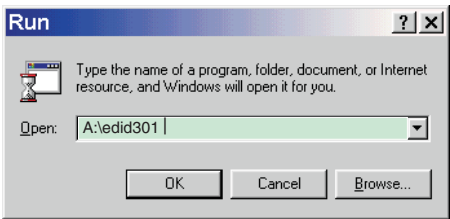
5. DDC re-programming instructions

Start on DDC program


- Start Microsoft Windows.
- 1. Insert the disk containing EDID301.EXE program into floppy disk drive.
- 2. Click **Start** , choose Run at start menu of Windows 95/98.



- 4. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301, as shown in Fig. 5).



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5. Click  button. The main menu appears (as shown on Fig. 6).

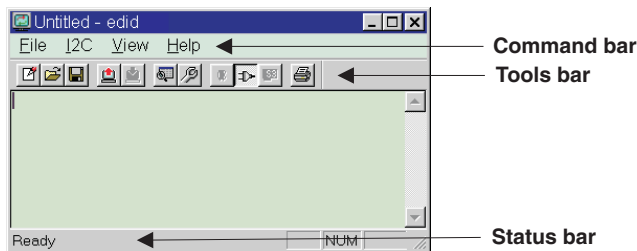

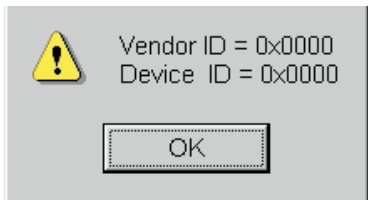




Fig. 6

Note: If the connection is improper, you will see the following error message before entering the main menu. Meanwhile, the  (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.



Loading DDC data from monitor

1. Click  icon on the tools bar to bring up the Configuration Setup windows as Fig.7
2. Select the DDC2B as the communication channel.
3. Enable Factory memory data write function and fill in page address "FA" to the block.
- 4.. Click  button to confirm your selection.

Note: The Factory memory data write function will allow EDID301 to rewrite the serial numbers of Software DDC data in main EEPROM.

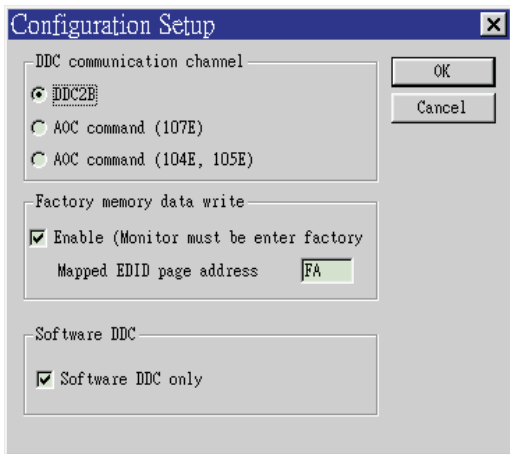

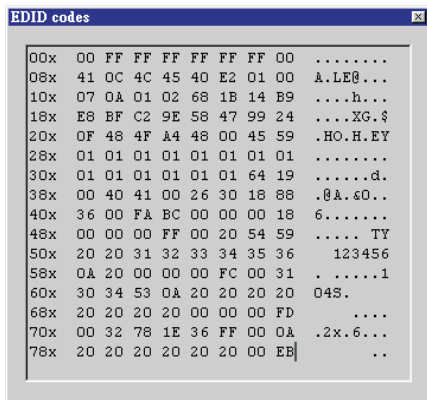


Fig. 7

4. Click  icon to read DDC EDID data from monitor. The EDID codes will display on screen as following. (The EDID codes are dependent on the model.)



- Note: During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen (Fig. 8). Please confirm following steps to avoid this message.
1. The data structure of EDID was incorrect.
 2. Software DDC Data that you are trying to load data is empty.
 3. Wrong communication channel has set at configuration setup windows.
 4. Cables loosed or poor contact of connection.
 5. ☐ Software DDC only is disable.

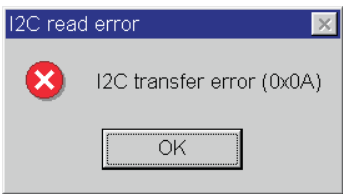




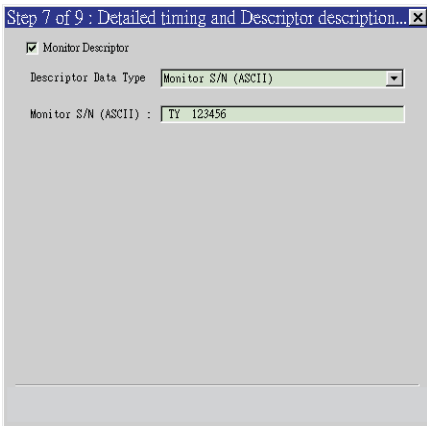


Fig. 8



Modify DDC data (Serial No.)

1. Click  icon on the tool bar.
2. Click  till the Step 7 of 9 window appears.
3. Type the new Serial No. (for example, TY 123456).
4. Click  till the last step window appears, then click  to exit the Step window.





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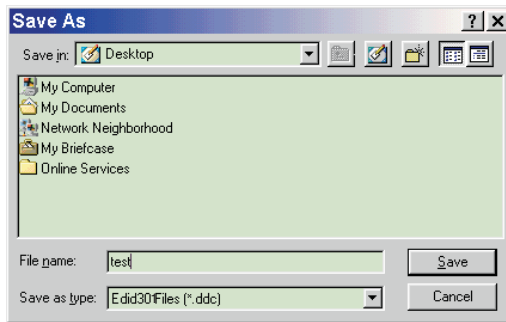
Write DDC data to monitor

1. Click  icon from the tools bar to starting rewrite DDC data.
2. Click  for confirmation.



Save DDC data as a file

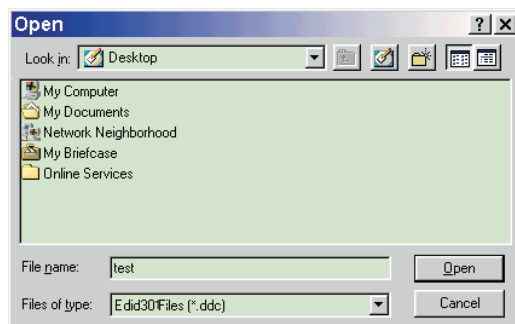
Sometimes, you maybe need to save DDC data as a text file for using on other DDC chip. To save DDC data, follow the steps below:

1. Click  icon on the tools bar and type a file name you like. The file format is ddc type which can be open by Microsoft WordPad.
2. Click  button.



Load DDC data from file

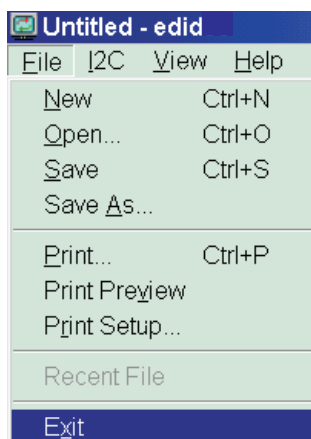
1. Click  from the tools bar.
2. Select the file you want to open.
3. Click  Button.



4. Now you can re-programming DDC data which you just loaded from a file, please be confirmed that model and serial number are correct and match with the monitor you are trying to re-write.

Exit DDC program

1. Click file command on the command bar then select Exit.



Definition of Serial Number

T Y 0 0 9 9 2 8 0 0 0 0 1

- Serial Number (U.S.A: 8 digit)
(Others regions: 6 digit)
- Week
- Year
- TY Code
TY----Chungli
CX----Dong Guan
HD----Hungary
BZ----Suzhou

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*****		H Image Size (mm)		: 250							
104SPHL.chk		V Image Size (mm)		: 188							
*****		H Border (pixels)		: 0							
Vendor/Product Identification		V Border (lines)		: 0							
ID Manufacturer Name		: PHL		Flags		: Non-interlaced					
ID Product Code		: 454C(HEX.)				Normal Display, No stereo					
ID Serial Number		: 123456(DEC.)				Digital Seperate Sync					
Week of Manufacture		: 7				Negative V Sync					
Year of Manufacture		: 2000				Negative H Sync					
EDID Version, Revision				Monitor Descriptor #2							
Version				: 1							
Revision				: 2							
				Serial Number				: TY 123456			
Basic Display Parameters/Features				Monitor Descriptor #3							
Video Input Definition				: Analog Video Input				Monitor Name		: 104S	
				0.700V/0.000V (0.70Vpp)							
				withoutBlank-to-Black setup							
				Separate Sync							
				without Composite Sync							
				without Sync on Green							
				no Serration required							
Maximum H Image Size				: 27 cm				Monitor Descriptor #4			
Maximum V Image Size				: 20 cm				Monitor Range Limits			
								Min Vt rate Hz		: 50	
								Max Vt rate Hz		: 120	
								Min Hori. rate KHz		: 30	
								MaxHori. rate KHz		: 54	
								Max. Support Pixel		: Not specified	
Display Transfer Characteristic: 2.76								Extension Flag		: 0	
(gamma)								Check sum		: A6(hex)	
Feature Support (DPMS)				: Standby							
				Suspend							
				Active Off							
Display Type				: RGB color display							
Color Characteristics											
Red X coordinate				: 0.620							
Red Y coordinate				: 0.345							
Green X coordinate				: 0.305							
Green Y coordinate				: 0.600							
Blue X coordinate				: 0.155							
Blue Y coordinate				: 0.065							
White X coordinate				: 0.281							
White Y coordinate				: 0.311							
Established Timings											
Established Timings I				: 720 x 400 @70Hz (VGA,IBM)							
				640 x 480 @60Hz (VGA,IBM)							
				640 x 480 @75Hz (VESA)							
Established timings II				: 800 x 600 @75Hz (VESA)							
				1024 x 768 @60Hz (VESA)							
Manufacturer's timings				:							
Standard Timing Identification #1											
Horizontal active pixels				: 800							
Aspect Ratio				: 4:3							
Refresh Rate				: 85							
Detailed Timing #1											
Pixel Clock (MHz)				: 65							
H Active (pixels)				: 1024							
H Blanking (pixels)				: 320							
V Active (lines)				: 768							
V Blanking (lines)				: 38							
H Sync Offset (F Porch) (pixels):				24							
H Sync Pulse Width (pixels):				136							
V Sync Offset (F Porch) (lines) :				3							
V Sync Pulse Width (lines) :				6							

DDC DATA & EDID Code

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104SCPT.chk

Vendor/Product Identification
ID Manufacturer Name : PHL
ID Product Code : 454C(HEX.)
ID Serial Number : 123456(DEC.)
Week of Manufacture : 7
Year of Manufacture : 2000

EDID Version, Revision
Version : 1
Revision : 2

Basic Display Parameters/Features
Video Input Definition : Analog Video Input
0.700V/0.000V (0.70Vpp)
without Blank-to-Black setup
Separate Sync
without Composite Sync
without Sync on Green
no Serration required
Maximum H Image Size : 27 cm
Maximum V Image Size : 20 cm

Display Transfer Characteristic: 2.85
(gamma)

Feature Support (DPMS) : Standby
Suspend
Active Off
Display Type : RGB color display

Color Characteristics
Red X coordinate : 0.619
Red Y coordinate : 0.347
Green X coordinate : 0.280
Green Y coordinate : 0.601
Blue X coordinate : 0.144
Blue Y coordinate : 0.059
White X coordinate : 0.281
White Y coordinate : 0.311

Established Timings
Established Timings I : 720 x 400 @70Hz (VGA,IBM)
640 x 480 @60Hz (VGA,IBM)
640 x 480 @75Hz (VESA)
Established timings II : 800 x 600 @75Hz (VESA)
1024 x 768 @60Hz (VESA)

Manufacturer's timings :
Standard Timing Identification #1
Horizontal active pixels : 800
Aspect Ratio : 4:3
Refresh Rate : 85

Detailed Timing #1
Pixel Clock (MHz) : 65
H Active (pixels) : 1024
H Blanking (pixels) : 320
V Active (lines) : 768
V Blanking (lines) : 38
H Sync Offset (F Porch) (pixels): 24
H Sync Pulse Width (pixels): 136
V Sync Offset (F Porch) (lines) : 3
V Sync Pulse Width (lines) : 6

H Image Size (mm) : 250
V Image Size (mm) : 188
H Border (pixels) : 0
V Border (lines) : 0
Flags : Non-interlaced
Normal Display, No stereo
Digital Seperate Sync
Negative V Sync
Negative H Sync

Monitor Descriptor #2
Serial Number : TY 123456

Monitor Descriptor #3
Monitor Name : 104S

Monitor Descriptor #4
Monitor Range Limits
Min Vt rate Hz : 50
Max Vt rate Hz : 120
Min Hori. rate KHz : 30
MaxHori. rate KHz : 54
Max. Support Pixel : Not specified

Extension Flag : 0
Check sum : EB (hex.)

104SCPT EDID data (128 bytes)

Table with 8 columns (0: 00 to 7: 00) containing EDID data bytes in hexadecimal format.

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All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both Hipot and Ground Continuity testing.

HI-POT TEST INSTRUCTION

1. Application requirements

- 1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.
- 1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

- 2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.
- 2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.
- 2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

- 2.2.1 The test with AC voltage is only for production purpose, **Service center shall use DC voltage.**
- 2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.
- 2.2.3 The test voltage must be maintained within the specified voltage + 5%.
- 2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

Back

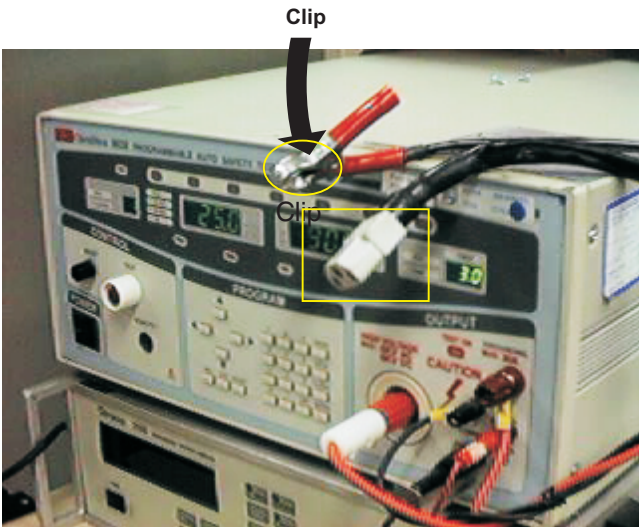
3. Equipments and Connection

3.1. Equipments

- For example :
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
 - ChenHwa 510B Digital Grounding Continuity Tester
 - ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection

* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



(ChenHwa 9032 tester)

Connect the "video cable" or "grounding screw" to the CLIP on your tester.

Video cable

Grounding screw

Connect the power cord to the monitor.

Power outlet

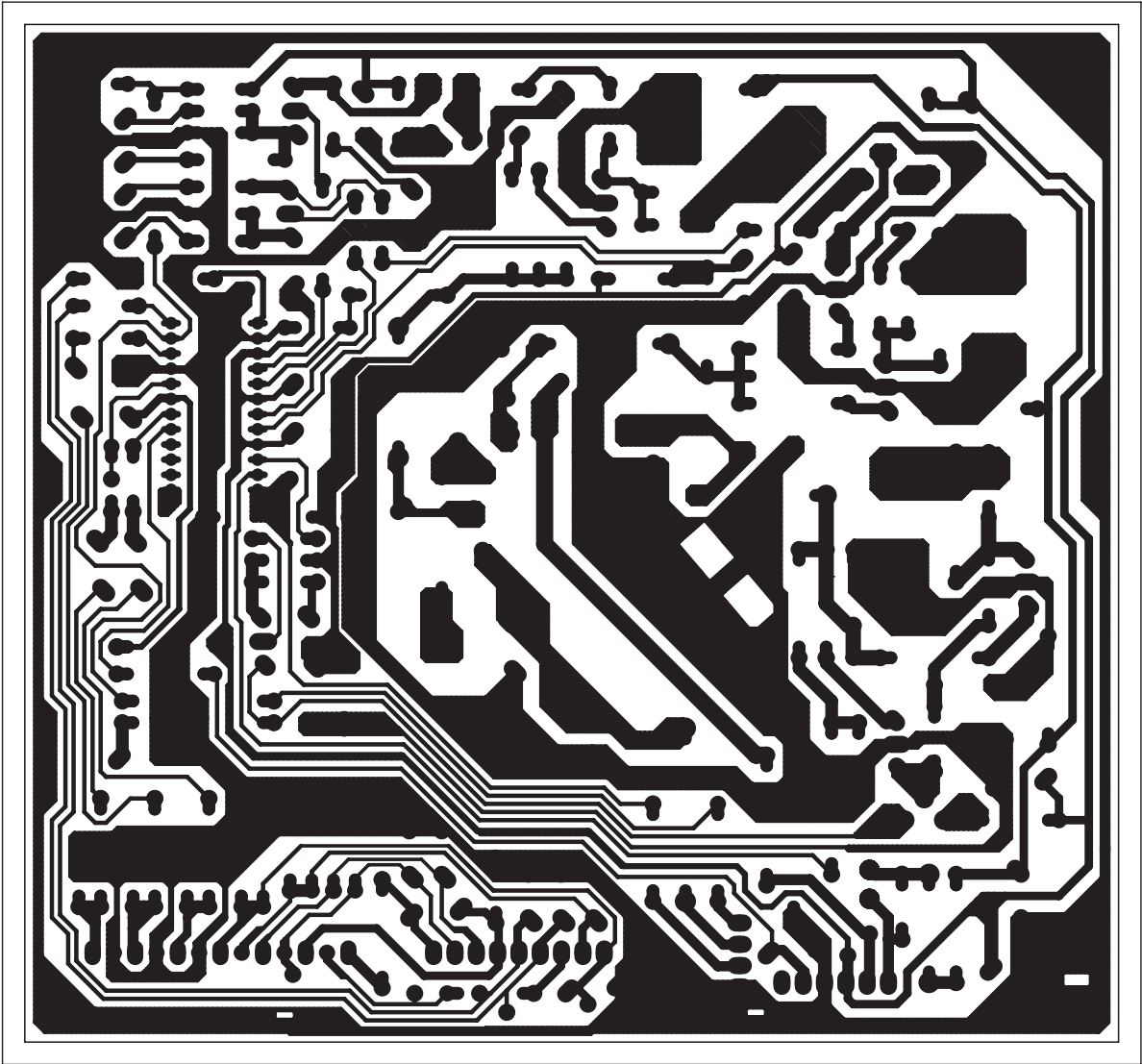
(Rear view of monitor)

4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

Forward

CLICK HERE FOR COMPONENT LAYER

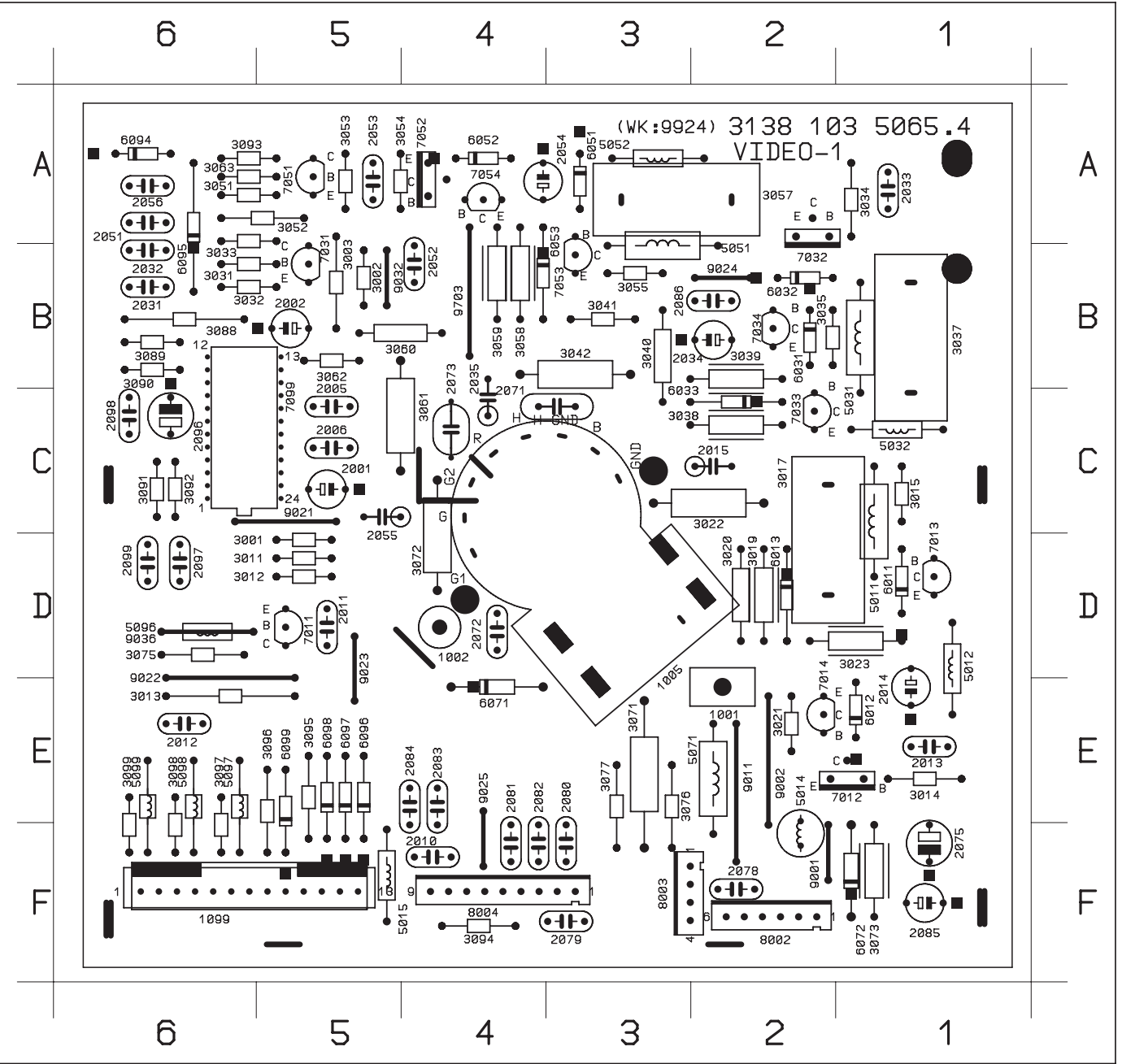
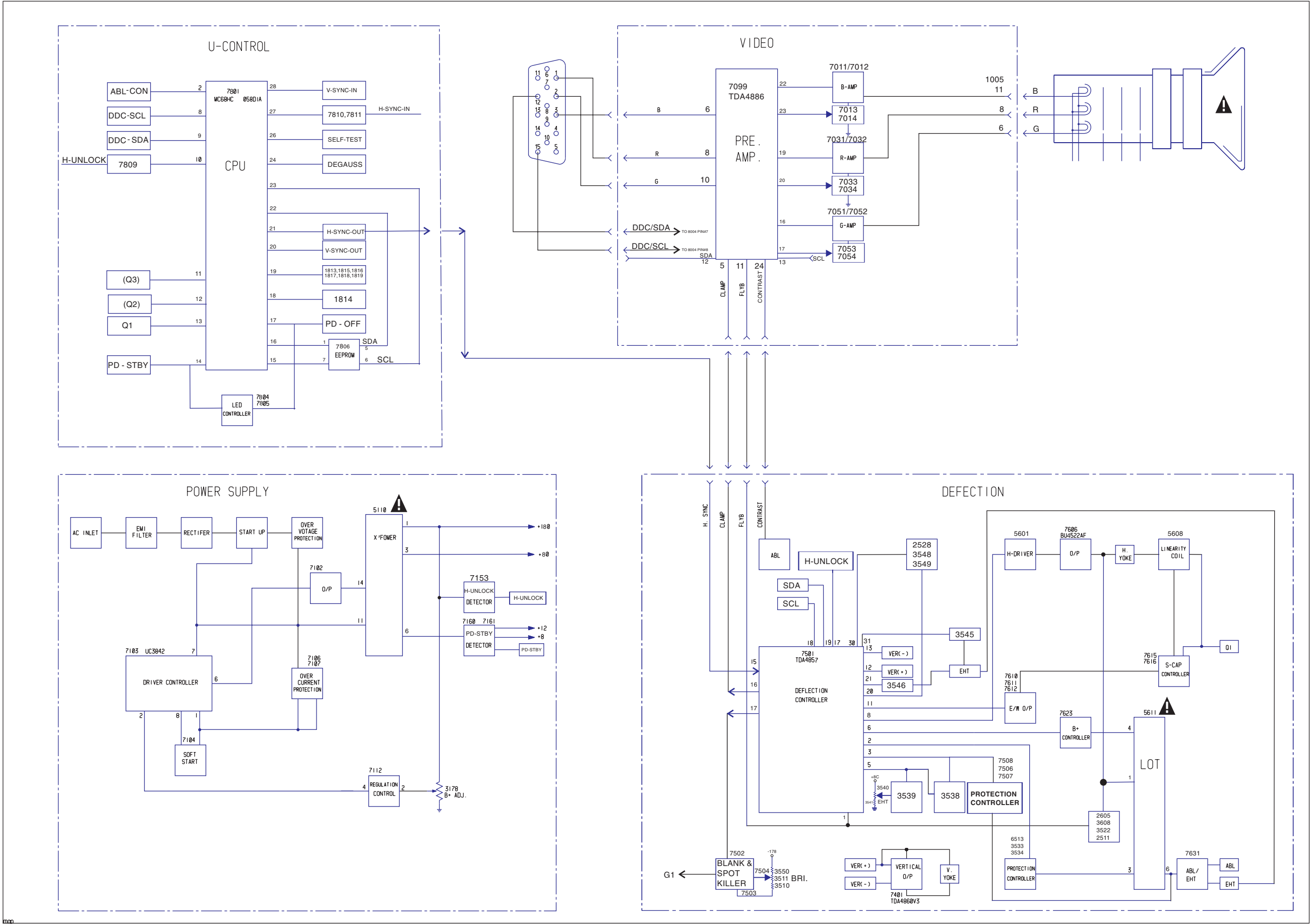


BLOCK DIAGRAM

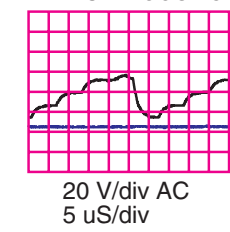
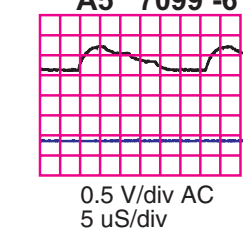
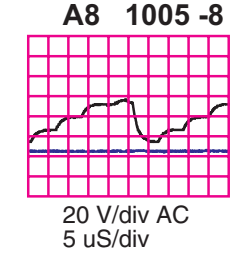
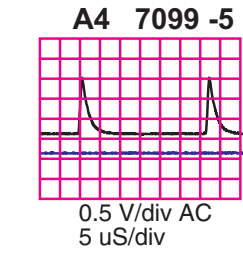
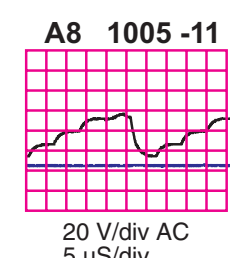
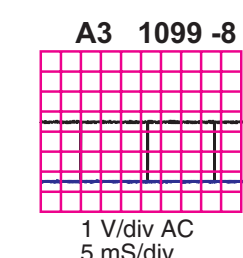
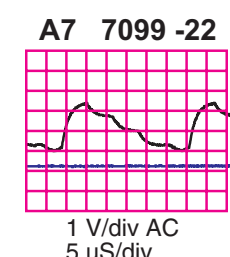
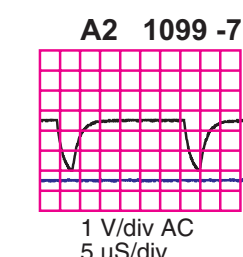
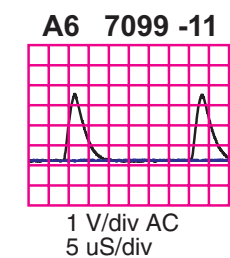
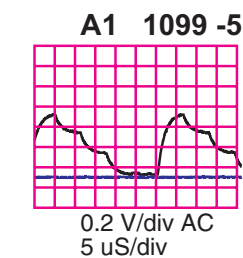
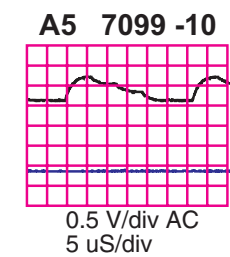
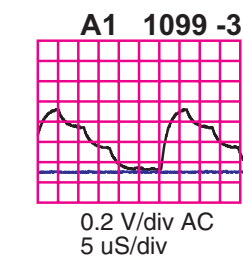
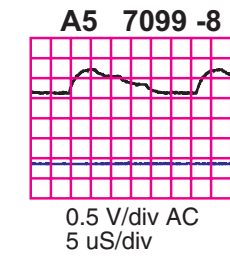
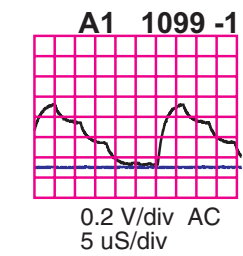
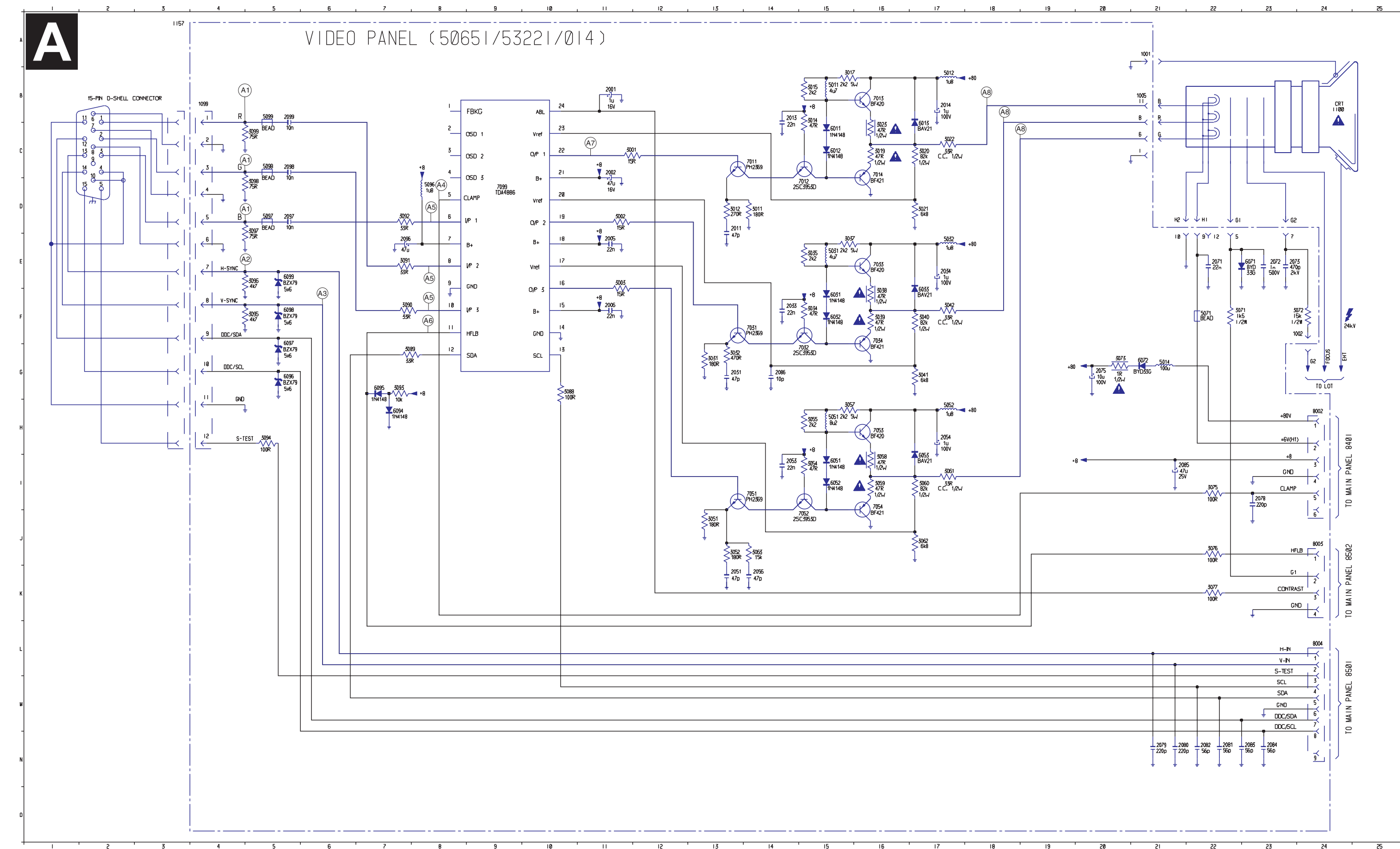
VIDEO BOARD PCB

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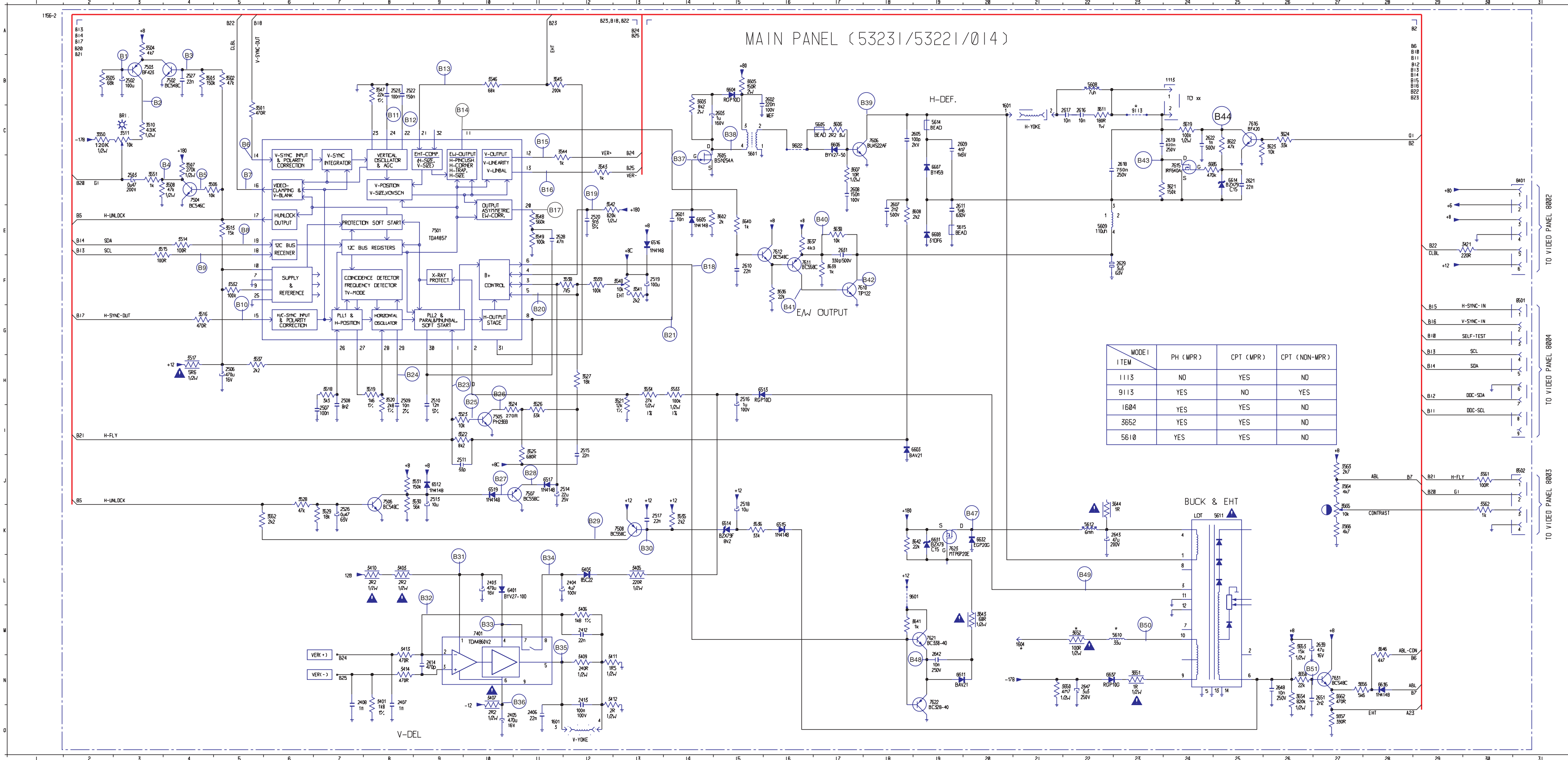
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	5096 D 6	3023 D 2	2001 C 5
	5097 F 6	3031 B 6	2002 B 5
	5098 F 6	3032 B 6	2005 C 5
	5099 F 6	3033 A 6	2006 C 5
	6011 D 1	3034 A 1	2010 F 4
	6012 E 1	3035 B 2	2011 D 5
	6013 D 2	3037 B 1	2012 E 6
	6031 B 2	3038 C 3	2013 E 1
	6032 B 2	3039 B 2	2014 D 1
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	6071 E 4	3052 A 6	2034 B 2
	6072 F 1	3053 A 5	2035 C 4
	6094 A 6	3054 A 5	2051 A 6
	6095 A 6	3055 B 3	2052 B 4
	6096 E 5	3057 A 2	2053 A 5
	6097 E 5	3058 B 4	2054 A 4
	6098 E 5	3059 A 4	2055 C 5
	6099 E 5	3060 B 5	2056 A 6
	7011 D 5	3061 B 5	2071 C 3
	7012 E 2	3062 B 5	2072 D 4
	7013 D 1	3063 A 6	2073 C 4
	7014 E 2	3071 F 3	2075 F 1
	7031 B 5	3072 D 4	2078 F 2
	7032 A 2	3073 F 1	2079 F 3
	7033 C 2	3075 D 6	2080 F 3
	7034 B 2	3076 E 3	2081 F 4
	7051 A 5	3077 E 3	2082 F 4
	7052 A 4	3088 B 6	2083 F 4
	7053 B 3	3089 B 6	2084 F 4
	7054 A 4	3090 B 6	2085 F 1
	7099 C 6	3091 C 6	2086 B 2
	8002 F 2	3092 C 6	2096 C 6
	8003 F 3	3093 A 6	2097 D 6
	8004 F 3	3094 F 4	2098 C 6
	9001 F 5	3095 E 5	2099 D 6
	9002 E 2	3096 E 5	3001 D 5
	9011 E 2	3097 E 6	3002 B 5
	9021 C 6	3098 E 6	3003 B 5
	9022 D 5	3099 E 6	3011 D 5
	9023 E 5	5011 C 1	3012 D 5
	9024 B 2	5012 D 1	3013 E 6
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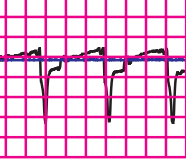
Deflection

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B1

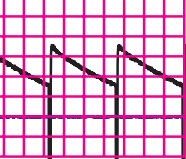


B1 7503-B



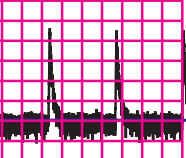
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10 ms/div

B2 7503-C



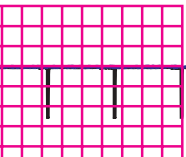
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5 ms/div

B3 7502-B



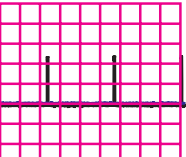
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5 ms/div

B4 7504-C



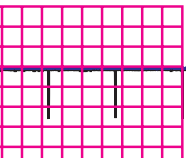
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5 ms/div

B5 7504-B



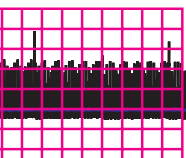
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5 ms/div

B6 7501-14



2 V/div AC
5 ms/div

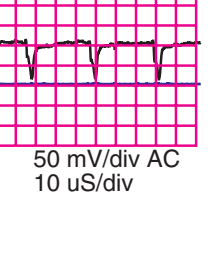
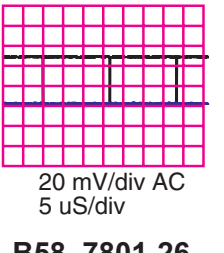
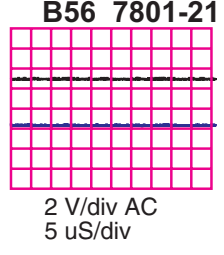
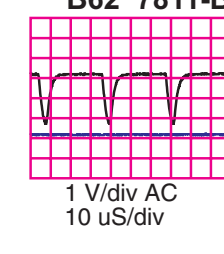
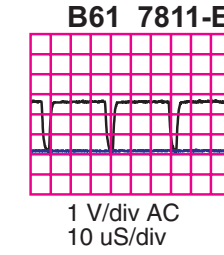
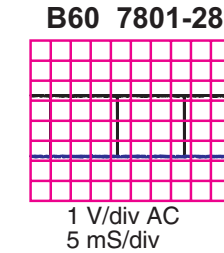
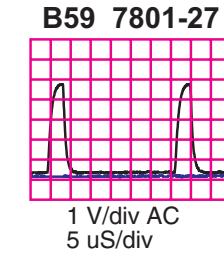
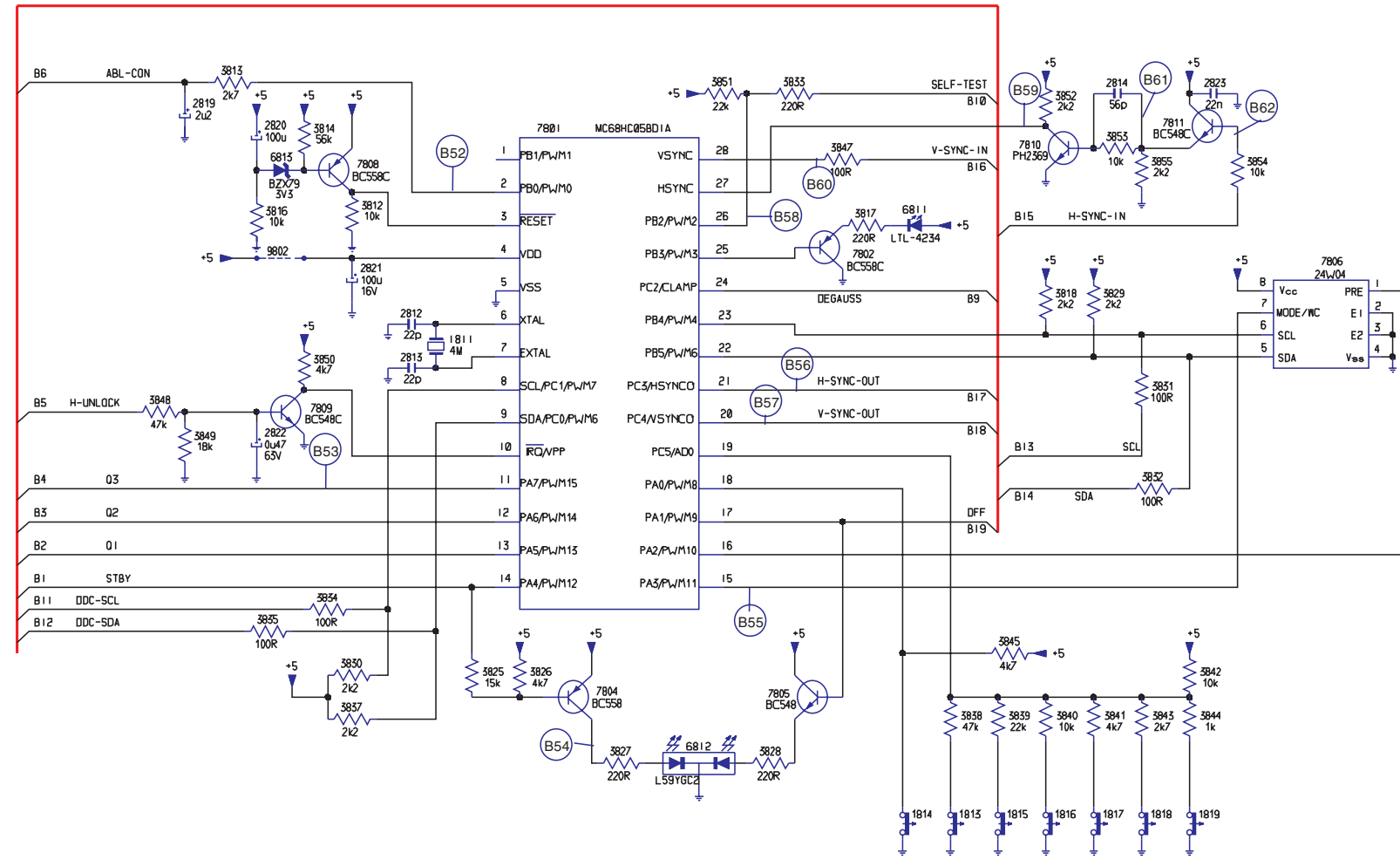
B7 7501-16

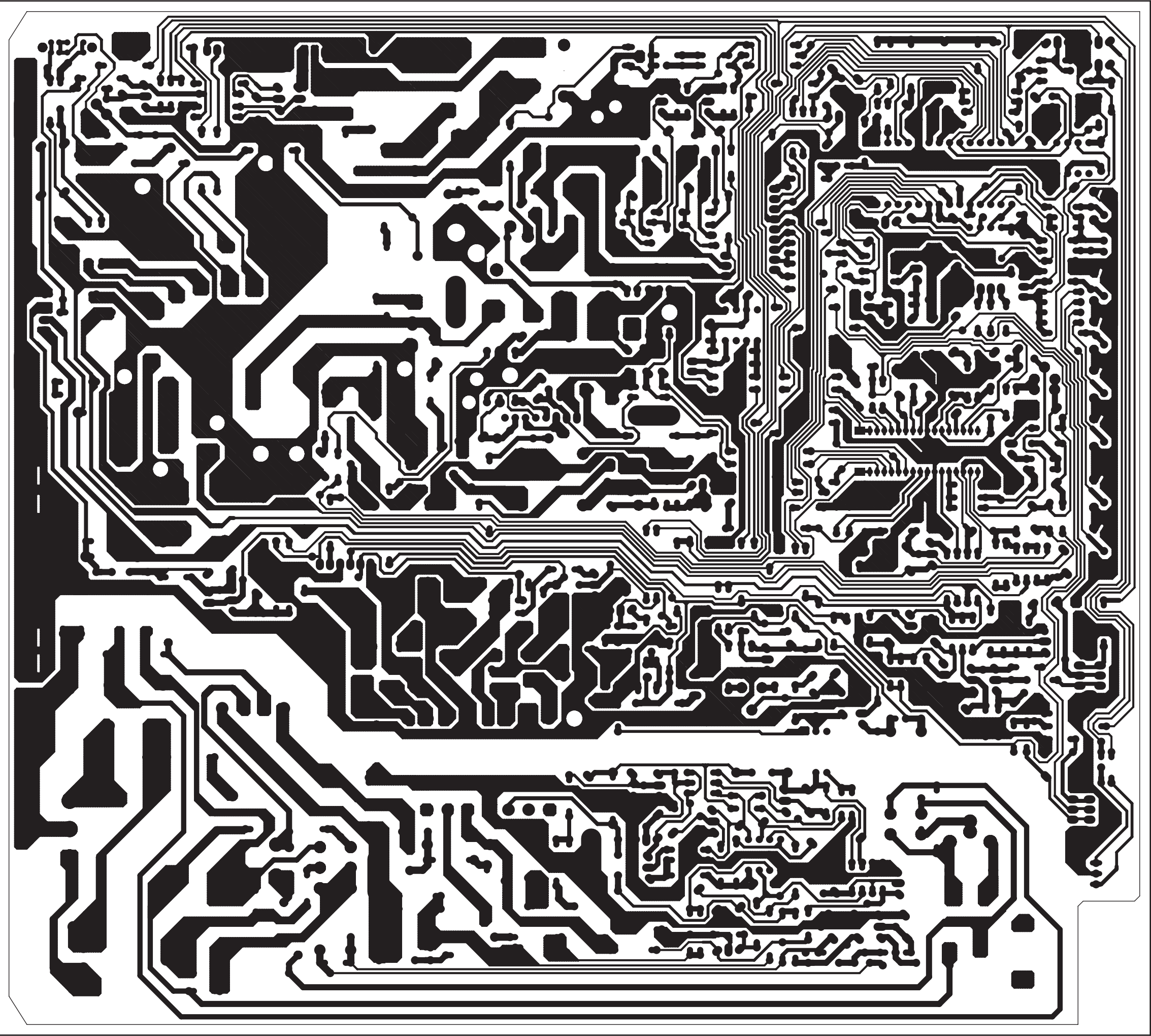


1 V/div AC
10 μs/div

Back

Forward



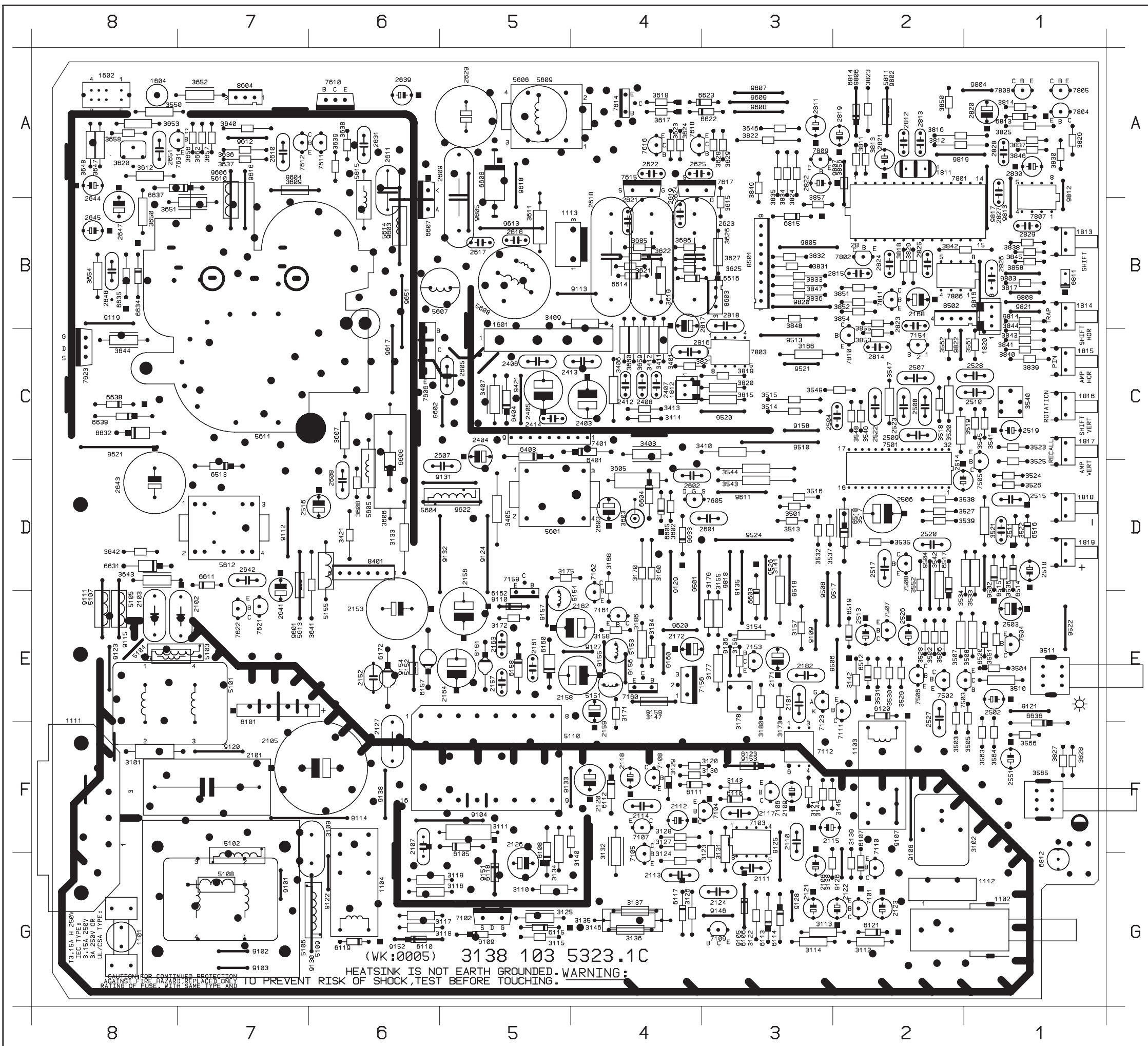


PWB(MAIN BOARD)

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PWB(MAIN BOARD)

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0122 G 6	0517 D 2	3815 C 3	3593 F 2	2625 A 4	1101 G 6
0123 E 8	0518 D 2	3816 A 2	3594 E 1	2629 A 5	1102 G 2
0124 D 5	0519 E 2	3817 B 1	3595 F 3	2631 A 6	1103 F 2
0125 G 3	0520 E 1	3818 B 2	3596 E 2	2639 A 4	1104 G 6
0126 E 2	0603 E 3	3819 C 4	3597 E 2	2641 E 7	1111 F 8
0127 G 5	0604 D 4	3820 C 4	3598 E 2	2642 D 7	1112 G 2
0128 F 6	0605 E 3	3821 B 2	3599 E 2	2643 B 9	1113 G 2
0129 E 4	0606 C 6	3822 A 3	3511 E 2	2644 B 8	1601 C 5
0130 G 6	0607 A 6	3823 A 2	3513 D 3	2645 B 6	1602 A 8
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